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NWC Voyager

Getting Started

MPDS Compatible

NERA

enabling a wireless future

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All specifications are subject to change without notice.

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The NWC Voyager terminal fully complies with the R&TTE directive.

General

NWC Voyager is a GAN satellite terminal.

NWC Voyager offers 4.8 kbps/64 kbps speech, telefax, data service and MPDS (Mobile Packet Data Service) within the Inmarsat spot beam coverage, *see* ***Satellite Coverage Map***.

Antenna Unit

The **NWC Voyager Antenna Unit** consists of:

- Servo stabilized antenna dish with RF-Transceiver
- GPS receiver (option)
- Radome

Main Communication Unit - MCU

The **NWC Voyager Main Communication Unit (MCU)** - which constitutes the major electronic part - is designed for wall or desktop installation.

The MCU power input is 10.8 - 32 VDC. The maximum power requirement is approx. 110 W.

The MCU supplies 48 VDC power to the Antenna Unit through the coaxial cable.

Nera ISDN Handset
The handset keypad and built-in display allows dialing and control of the MCU and antenna.

Figure 1 NWC Voyager satellite terminal.

Communication services

Spot beam services

- **Speech**: - 64 kbps / 4.8 kbps
- **Data**: - 56/64 kbps (UDI)
- **MPDS** - Mobile Packet Data Service
  FWD = 64 kbps, RTN = 64 kbps
  Shared channel
- **Telefax**: - 64 kbps Group 4
  Group 3 via Terminal Adapter (TA)
- **Audio**: - 3.1 kHz (Audio)

Internal communication

Equipment connected to the various interfaces may communicate with each other via an internal MSN (Mobile Subscriber Number) assigned to each unit.

Control interface

The **RS-232/RS-422** or **USB** port allows connection of a PC for configuration of the NWC Voyager MCU.

A PC program (vtLite Mobile) that provides the software to operate and configure the MCU is supplied on the enclosed CD (requires at least Windows 98).

CD

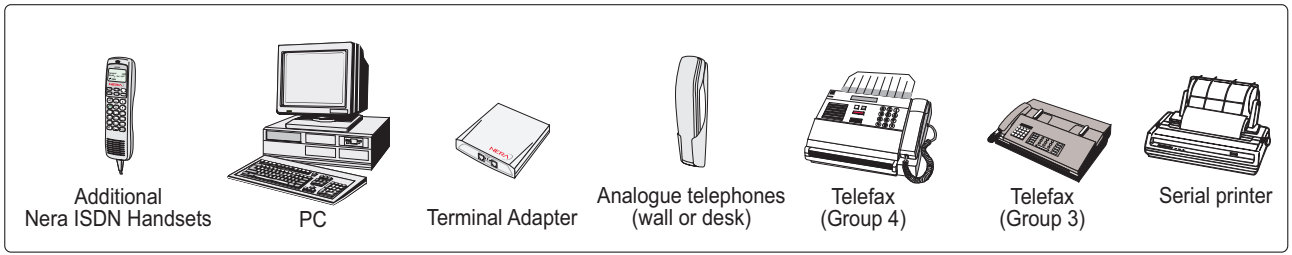
The CD ROM supplied with NWC Voyager contains:

- program for control from PC (vtLite Mobile)
- manuals
- application notes
- modem drivers
- and other useful information.

Additional equipment

- Additional Nera ISDN Handsets
- PC
- Videophone
- Group 4 telefax
- Terminal Adapter for connection of:
  - analogue DTMF telephone(s)
  - Group 3 telefax
- Printer w/RS-232 serial card

Figure 2 Additional equipment.



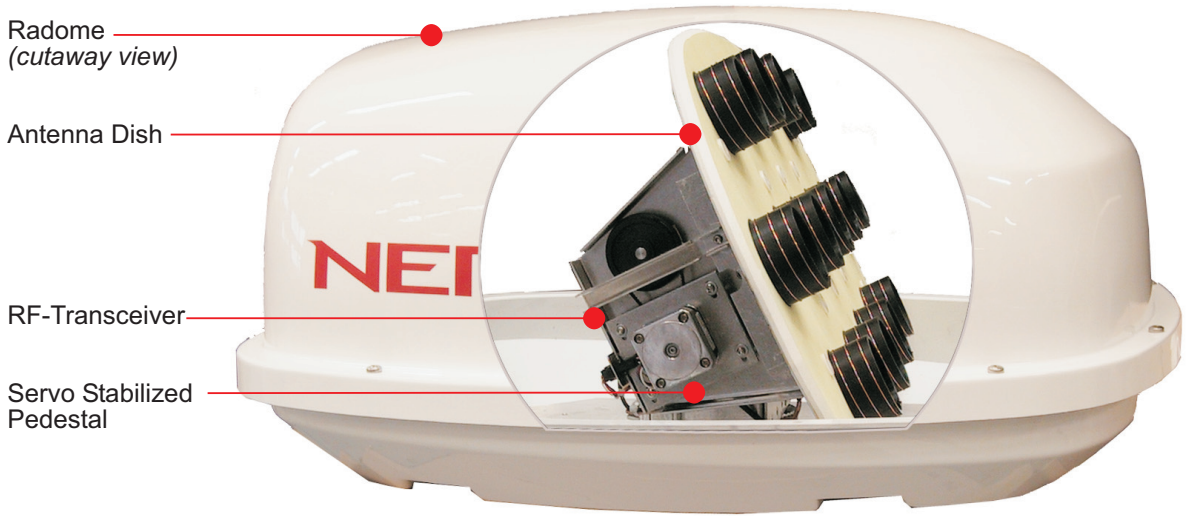
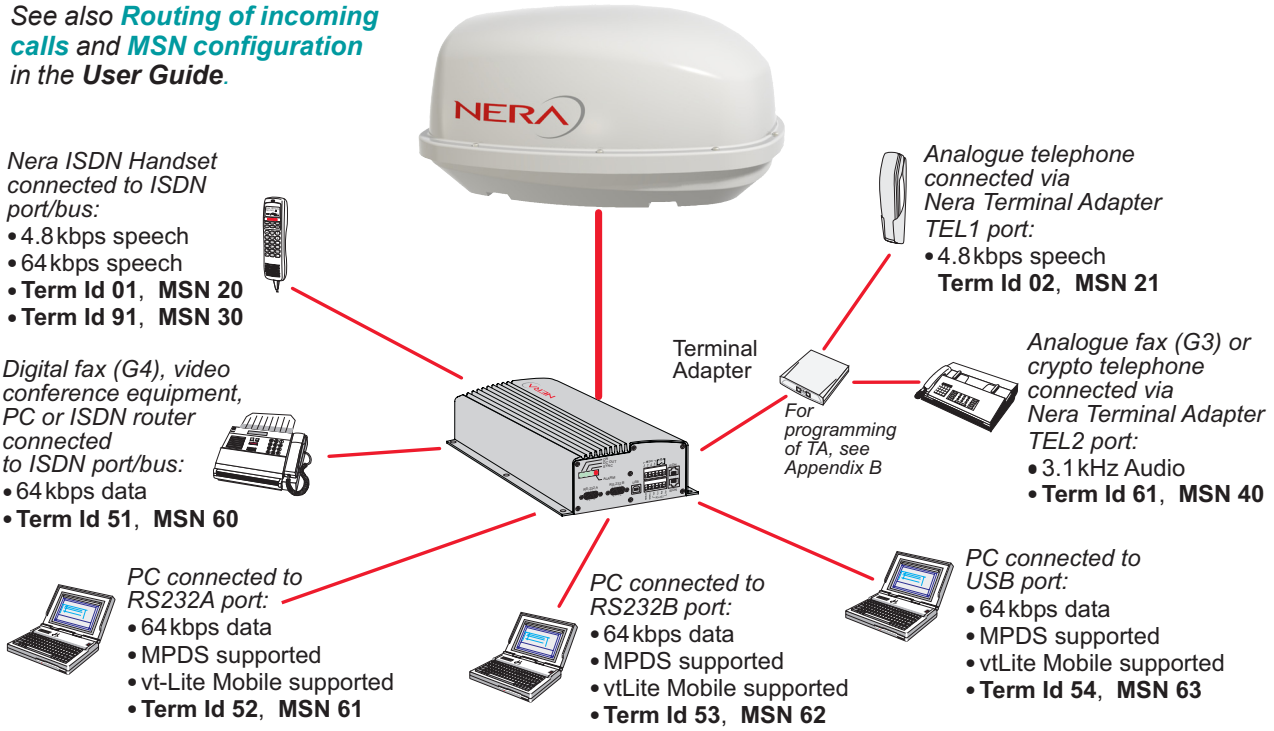


Figure 3 NWC Voyager - Antenna Unit parts.

Figure 4 Examples of prepro-grammed Terminal Ids and MSN numbers.

Allows direct connection without prior configuration.

*See also **Routing of incoming calls** and **MSN configuration** in the **User Guide**.*


NERA
Nera ISDN Handset connected to ISDN port/bus:
• 4.8 kbps speech
• 64 kbps speech
• Term Id 01, MSN 20
• Term Id 91, MSN 30
Digital fax (G4), video conference equipment, PC or ISDN router connected to ISDN port/bus:
• 64 kbps data
• Term Id 51, MSN 60
PC connected to RS232A port:
• 64 kbps data
• MPDS supported
• vt-Lite Mobile supported
• Term Id 52, MSN 61
PC connected to RS232B port:
• 64 kbps data
• MPDS supported
• vtLite Mobile supported
• Term Id 53, MSN 62
PC connected to USB port:
• 64 kbps data
• MPDS supported
• vtLite Mobile supported
• Term Id 54, MSN 63
Analogue fax (G3) or crypto telephone connected via Nera Terminal Adapter TEL2 port:
• 3.1 kHz Audio
• Term Id 61, MSN 40
Terminal Adapter
For programming of TA, see Appendix B
Analogue telephone connected via Nera Terminal Adapter TEL1 port:
• 4.8 kbps speech
Term Id 02, MSN 21

SIM card (for GAN services)

The SIM card carries subscription information from your Net service provider on an integrated circuit. The NWC Voyager used with the SIM card assumes the identity of the SIM card.

The SIM card has its own set of Inmarsat Mobile Numbers (IMN) on which the user can be contacted irrespective of the NWC Voyager used.
All outgoing calls will be billed to the owner of the SIM card.

The SIM card is protected by a SIM PIN (Personal Identification Number). Contact your Net service provider if you do not have the PIN code.

If the PIN code entered does not match the PIN code on the SIM card, operation with that particular SIM card will lock-up after three failed attempts. You must then use the SIM un-block code (PUK code) provided by your Net service provider to un-lock the card. Contact your Net service provider if you do not have the PUK code.

Note!
When the PUK is used, the SIM PIN is set to 1 2 3 4.

To change or disable the PIN code, *see **User Guide > Access level** on the enclosed CD.*

The SIM card can store various information, e.g.:

- PIN code (Personal Identification Number)
- Phone book
- Allowed Net service providers

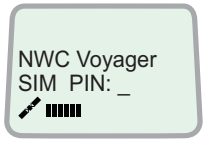
Note! NWC Voyager can be used with or without SIM card. The Net service provider, however, sometimes requires the use of SIM card.

The SIM card is located on the rear panel of the Main Communication Unit, *see figure 6.* The cover must be removed to access the the card slot. The cover is attached by two serrated screws. No tools are required to loosen the screws.

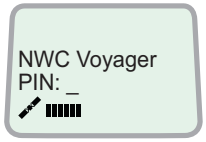
PIN code

The user is prompted for the 4-8 digit Personal Identification Number each time the NWC Voyager is switched on:

- SIM PIN? (with SIM card)



- PIN? (without SIM card)



*The PIN protection can be disabled, see "**Access level**" in the **User Guide**.*

Handsfree microphone

Display indicators:

- appears at hook OFF
- flashes when receiving a call
- Net provider & Ocean Region
- appears when loudspeaker is ON
- ALPHA — appears when selecting letters on the keypad, e.g. for Phone Book entries
- signal strength indicator
- alarm indicator

Function keys:

- allows adjusting the earpiece volume during conversation
- opens/closes Phone Book
- ESC — reverts to previous postion
- R — used to transfer a call
- MENU — selects function menu
- handsfree microphone/ loudspeaker ON/OFF (hook ON/OFF when in cradle)
- hook ON/OFF
- 1 . . . . . number keys. The keys include letters for Phone Book entries.
- OK — enters selected choice
- DEL — deletes last character or complete entry
- ▲ ▼ — scrolls up/down through function menu/choices

Handsfree loudspeaker

Figure 5 Display and keys.

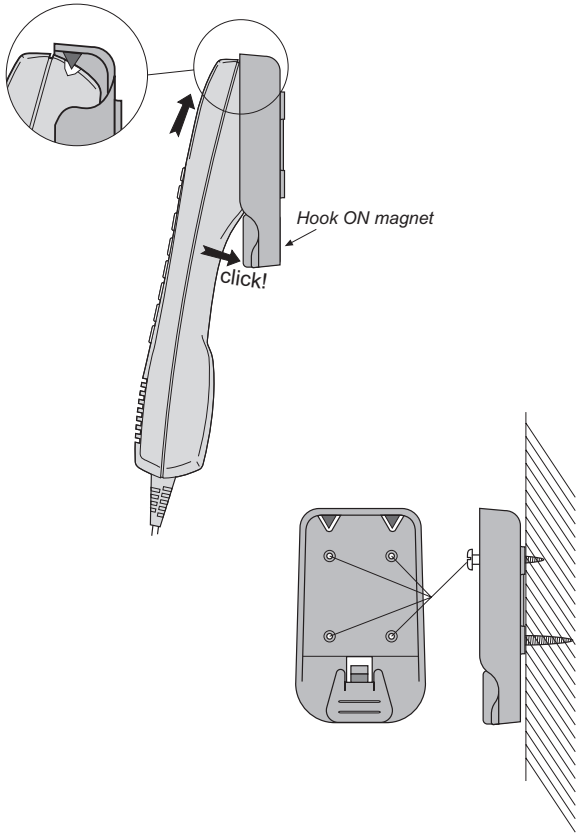


Figure 6 Holder/cradle wallmounted.

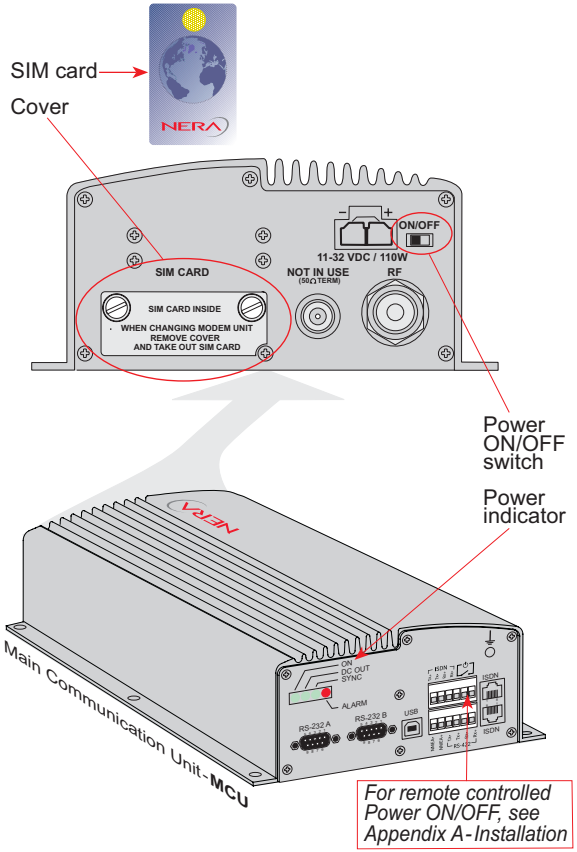


Figure 6 Location of SIM card and ON/OFF switch.

Switching ON

The **ON/OFF** switch located on the rear panel of the Main Communication Unit switches all basic units of the NWC Voyager terminal on/off:

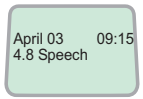
- the Nera ISDN Handset
- the Main Communication Unit (MCU), and
- the Antenna Unit.

*See figure 6 for location of the power **ON/OFF** switch and indicator.*

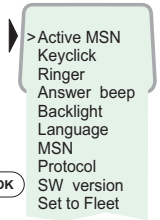
Nera ISDN Handset

When connected initially, the Handset is set to ***Mobile mode**, see next page*.

If the Handset display reads:
*(**Normal mode**)*



Open the **MENU**:



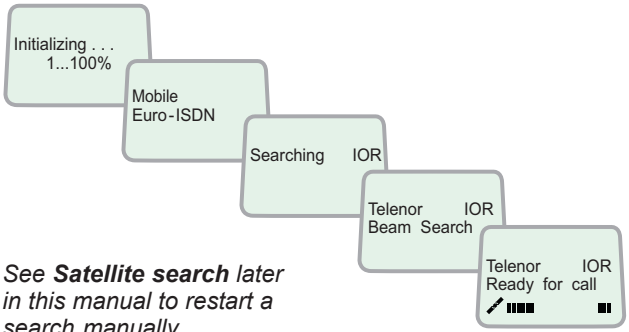
and scroll down to

Set to Fleet *(Mobile mode)*:
Pressing (OK) provides an idle display as shown on the next page.

To toggle between Normal and Mobile mode, unplug Handset and press and hold down (DEL) when reconnecting it.
*For Normal mode, see **Nera ISDN Handset - User Guide** on CD.*

NWC Voyager starts up

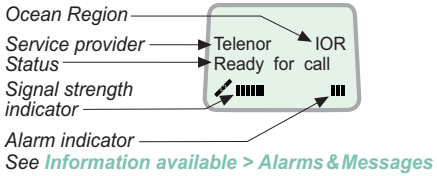
NWC Voyager automatically initializes the system and searches for the satellite (handset in **Mobile Mode**):



*See **Satellite search** later in this manual to restart a search manually.*

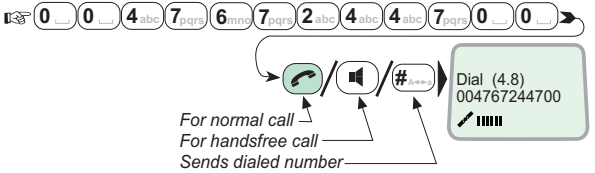
Idle

When idle, the Nera ISDN Handset displays:



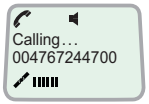
Making a call

- Dial 00, country code and subscriber number, e.g.:



Use DEL to modify entries: (DEL) Pressing DEL once, erases one digit. Holding the key more than 0.5 second erases the whole number.

- When entered, the display reads:



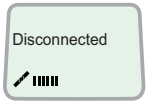
- When the remote end answers, the display reads:

Dash separates additional dialing

Timer, minutes:seconds

The timer starts.

- End the call by pressing hook ON/OFF, or replacing the handset in the cradle.



Use the handsfree key to toggle the loudspeaker ON/OFF.

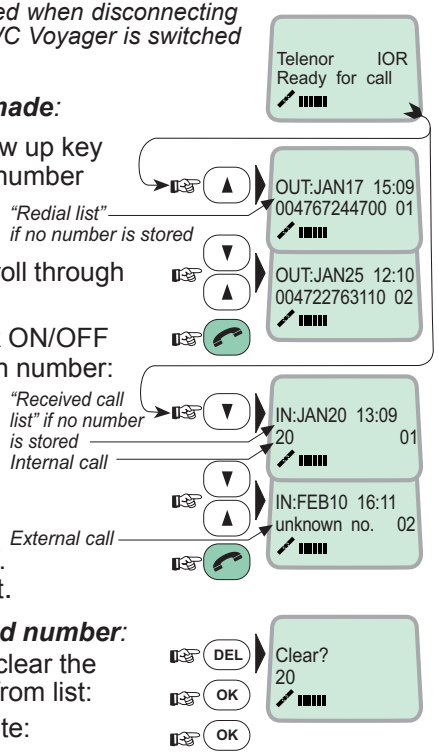
Alternative dialing:

Press or for dialing tone, then dial the number:

Redialing

The Redial Memory stores the last 30 called and received numbers (incoming IMN numbers are not conveyed from "ashore").

The data are erased when disconnecting the handset or NWC Voyager is switched off.



To redial calls made:

1 Press the arrow up key to recall the last number *dialed*:

2 Use the arrow keys to scroll through the list:

3 Pressing hook ON/OFF sends the chosen number:

To view calls received:

4 Press the arrow down key to recall the last number *received*. Scroll through list.

To delete a listed number:

5 Press (DEL) to clear the chosen number from list:

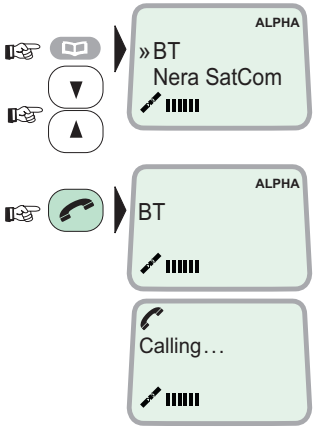
Press OK to delete:

Revert to idle:

Dialing from phone book

1 Press the phone book key:
and scroll through the phone book:

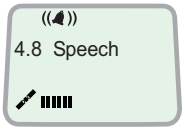
2 Press the hook key to call the selected number:



Incoming calls to handset

The handset rings when receiving a call.

The ringing symbol ((◢)) flashes until the call is answered.



• Answer the call by pressing hook ON/OFF: or handsfree:

With the Nera ISDN Handset in the cradle, the loudspeaker and microphone are ON for handsfree operation.

If lifting the handset, the loudspeaker turns OFF.

Timer, minutes:seconds

Use the handsfree key to toggle the loudspeaker ON/OFF.

- End the call by pressing hook ON/OFF, or replacing the handsset in the cradle.
- Reject the call by pressing **DEL**: DEL

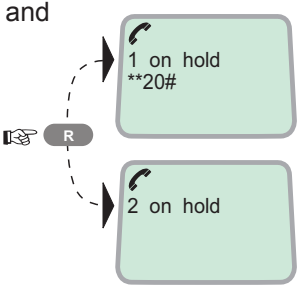
Note! If the ringing symbol ((◢)) is displayed when in idle, you have missed a call.

Call hold and transfer

Pressing R during a conversation will put the current call on hold. Another internal call may now be made.

Switching between the two calls:

- After putting the 1st call on hold by pressing R, the 2nd call is established by keying: * * [MSN] #
- The 1st call is put on hold, and the 2nd is connected.
- Toggling between the two calls is achieved by pressing R repeatedly:



Call transfer (connection via satellite):

MSN/Handset Id

R * * 2 0 # *Hang up*

R *toggles between subscribers*

Exception!
*Transfer from **analogue** to **ISDN** is not possible.*

Internal communication

NWC Voyager allows calls to be made internally between the connected **ISDN** and **analogue** telephones.

Internal calls:

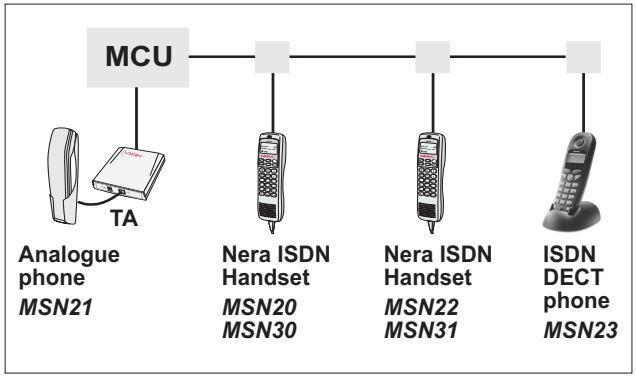
MSN *(example)*

[*] [*] [2] [0] [#]

When receiving a call to an ISDN phone, the caller`s MSN number will appear in the display (if programmed).

When NWC Voyager is busy with a satellite link data call, it is possible to make internal calls.

Example of internal call connections:



Various call procedures

Call from a standard telephone

[0] [0] [4] [7] [6] [7] [2] [4] [4] [7] [0] [0] [#]

Short number dialing from Phone Book (prefix 23)

[2] [3] [1] [5] [#] fetches and sends the telephone number stored in the Phone Book under short number 15.

Short number dialing (prefix 23) through selected Net service provider

[4] [*] [2] [3] [1] [5] [#] fetches and sends the telephone number stored under short number 15 via the selected Net service provider (Telenor=no. 4).

Service calls

Special information services are accessible with 2-digit service address code.
Note! Not all Net service providers offer every service.

Example:
Calling the technical staff of the Land Earth Station (LES): [3] [3] [#]

Telefax

On a telefax with keypad, enter [#] as the last digit before starting transmission:

[0] [0] [4] [7] [6] [7] [2] [4] [4] [6] [2] [1] [#] [START]

Note! Some types of equipment do not have # implemented in software even if the #-key is on the keypad. Then in front of the telephone number use:

903 if dialing the number digit by digit, or

902 if for the number to be sent as a block. e.g.:

[9] [0] [2] [0] [0] [4] [7] [6] [7] [2] [4] [4] [7] [0] [0] [📞]

To call NWC Voyager

Dial the international prefix (normally 00) followed by **870** and the IMN number, e.g. 00 **870** 762420510.

*The common Ocean Region access no. **870** connects the call to the dialed NWC Voyager terminal regardless of the Ocean Region the terminal user currently communicates through.*

*If the PSTN network does not support access no. **870**, call the Ocean Region directly:*

871 – AOR-E (Atlantic Ocean Region East)

872 – POR (Pacific Ocean Region)

873 – IOR (Indian Ocean Region)

874 – AOR-W (Atlantic Ocean Region West)

Phone book entry

The entries in the NWC Voyager phone book may consist of maximum 100 numbers. The number/name list is stored in the Main Communication Unit.

Programming:

1 Open the **phone book > menu**:
Open the **Add entry** function by pressing **Ok** before starting to key in characters.

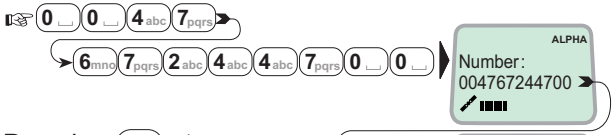
2 Enter the name, e.g. Nera ASA.

Note that the additional characters accessible with the key appear momentarily. See the character table on next page.

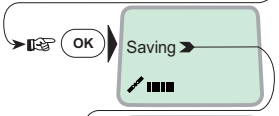
*For modifying an entry, see **Phone book editing** on next page.*

Enter the phone number, continue on next page . . . .

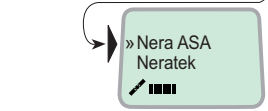
3 Enter the telephone number e.g.:



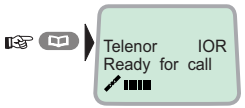
4 Pressing OK stores the entry in the phone book:



An entry can be erased by pressing DEL



Revert to idle:



*The **character table** shows all the characters accessible:*

Notes:

- *The # -key toggles between upper-case and lower-case characters.*
- *Names written with none Anglo-American characters such as Æ, Ø, Å etc., can only contain 6 different special characters (however, 2 equal characters count as 1).*

Key	Uppercase	Lowercase
1	. , ? ! - : ; / 1	. , ? ! - : ; / 1
2 abc	ABCÆÅÄ2	abcæåä2
3 def	DEF3	def3
4 abc	GHI4	ghi4
5 jkl	JKL5	jkl5
6 mno	MNOØÖ6	mnoøö6
7 pqrs	PQRS7	pqrs7
8 tuv	TUVÜ8	tuvü8
9 wxyz	WXYZ9	wxyz9
0	_0	_0

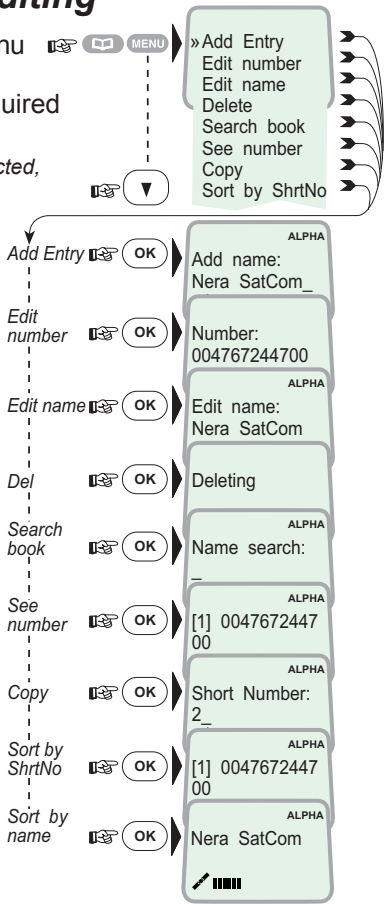
Phone book editing

Open phone book menu and scroll down to the required function.

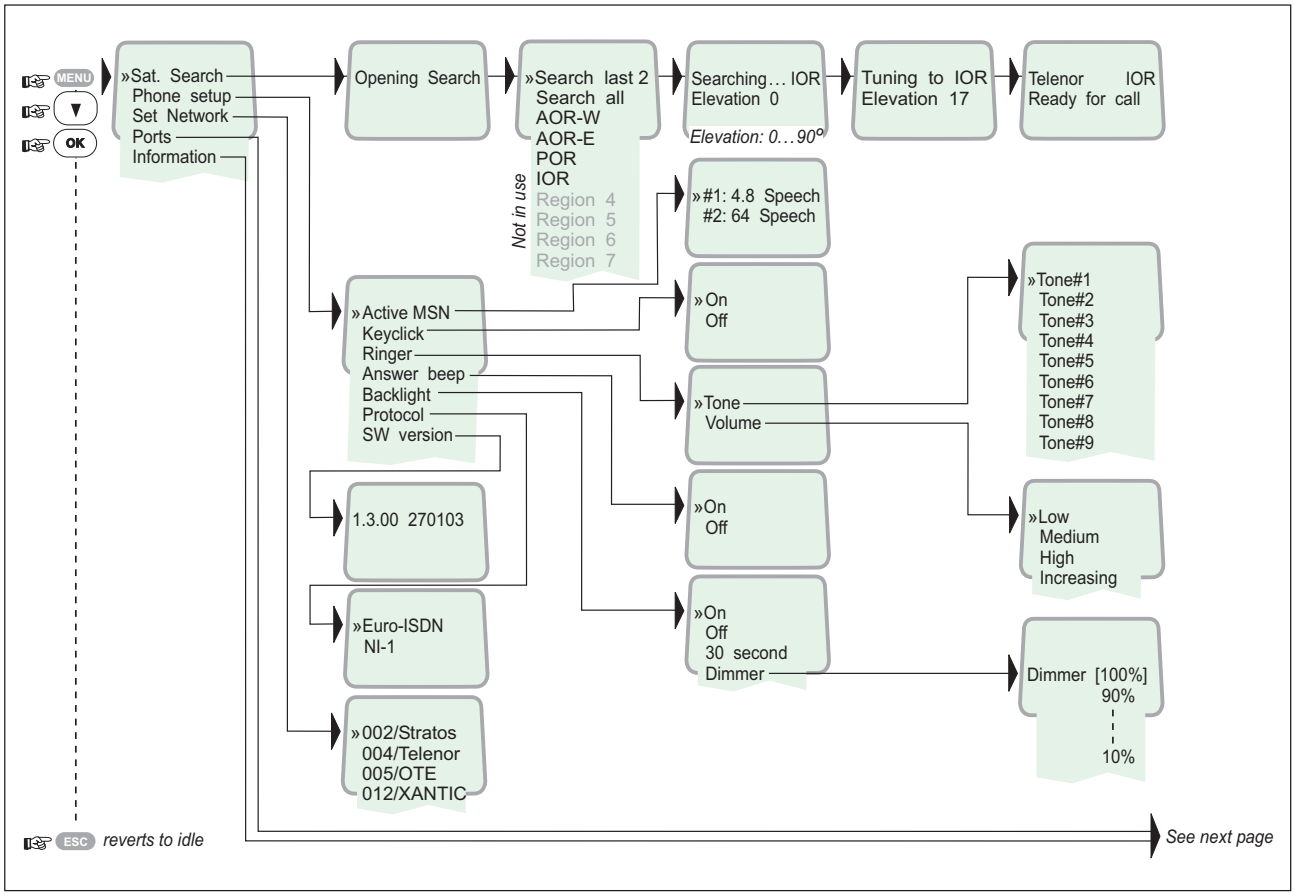
If "Sort by ShrtNo" is selected, the function switches to "Sort by Name".

ALPHA *appears when letters are to be entered.*

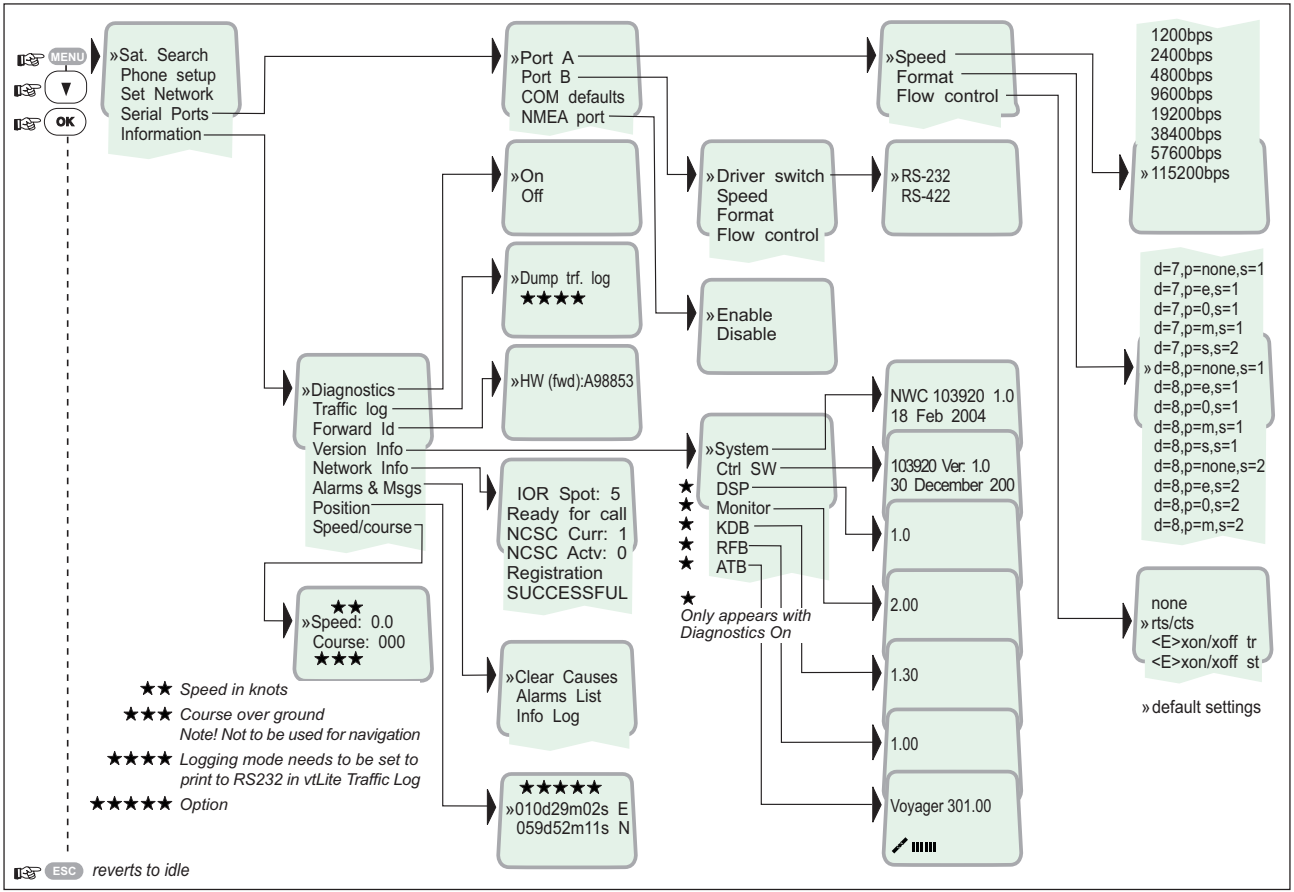
Use DEL *to modify entries.*



Overview


MENU
OK
»Sat. Search
Phone setup
Set Network
Ports
Information
Opening Search
»Search last 2
Search all
AOR-W
AOR-E
POR
IOR
Region 4
Region 5
Region 6
Region 7
Not in use
Searching… IOR
Elevation 0
Elevation: 0…90°
Tuning to IOR
Elevation 17
Telenor IOR
Ready for call
»Active MSN
Keyclick
Ringer
Answer beep
Backlight
Protocol
SW version
»#1: 4.8 Speech
#2: 64 Speech
»On
Off
»Tone
Volume
»Tone#1
Tone#2
Tone#3
Tone#4
Tone#5
Tone#6
Tone#7
Tone#8
Tone#9
1.3.00 270103
»On
Off
»Low
Medium
High
Increasing
»Euro-ISDN
NI-1
»On
Off
30 second
Dimmer
Dimmer [100%]
90%
10%
»002/Stratos
004/Telenor
005/OTE
012/XANTIC
ESC reverts to idle
See next page

Overview cont'd



Satellite search

Some geographic locations allow contact with more than one Ocean Region satellite. It is recommended to choose an Ocean Region providing good signal quality and cost-effective communication.

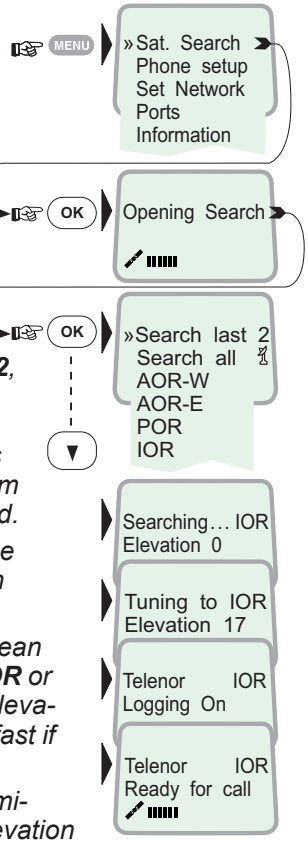
*Use the **Satellite Coverage Map** on next pages to select the Ocean Region at your location:*

Atlantic Ocean Region West:	**AOR-W**
Atlantic Ocean Region East:	**AOR-E**
Pacific Ocean Region:	**POR**
Indian Ocean Region:	**IOR**

Regions 4 - 7 are not in use.

To select another Ocean Region:

1 Open the **MENU** and press **Sat. Search**:



Pressing OK opens the list of searching alternatives:

2 Select as required:

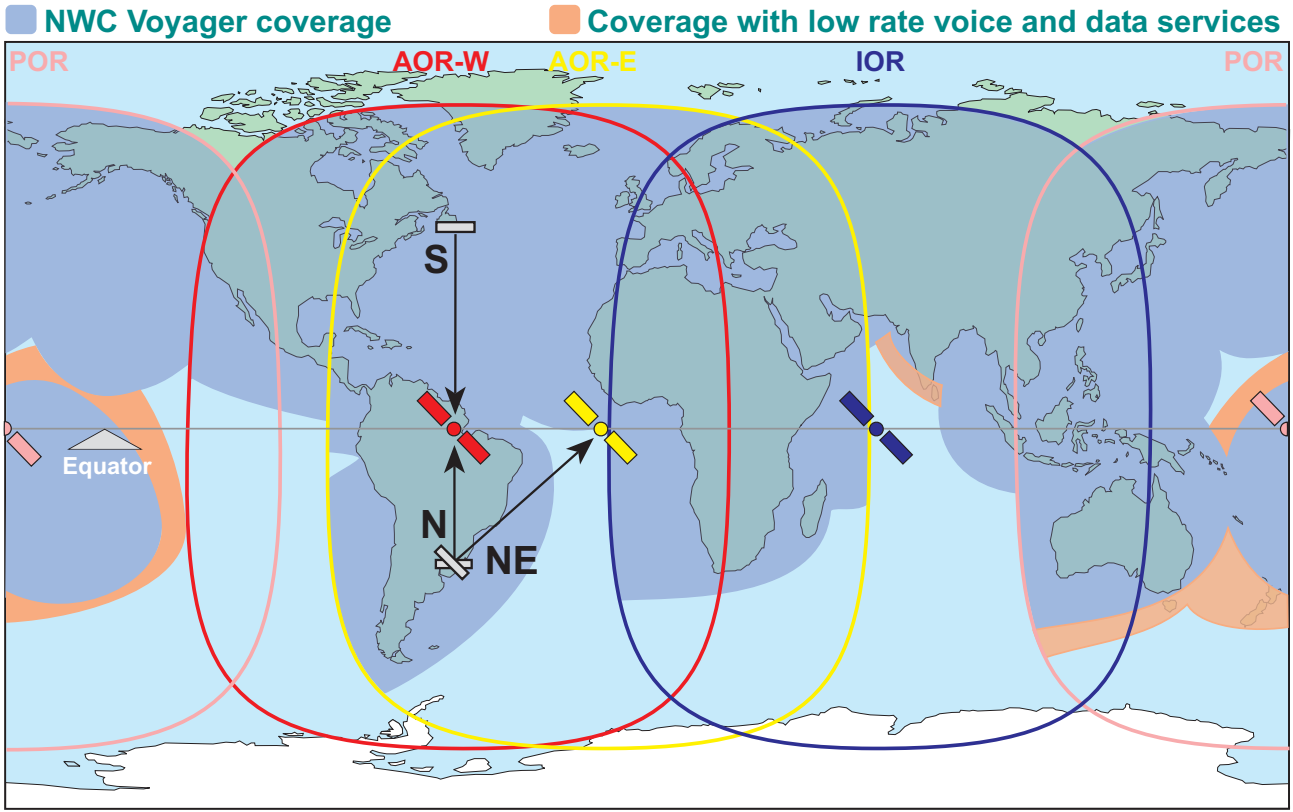
*When selecting **Search last 2**, the antenna starts searching for the **last used satellite/ elevation** (Ocean Region) as default. If not found the system searches for the 2nd last used.*

*When selecting **Search all** the antenna searches one Ocean Region after the other.*

*When selecting a specific Ocean Region (**AOR-W**, **AOR-E**, **POR** or **IOR**) the system knows the elevation and will find the satellite fast if visible.*

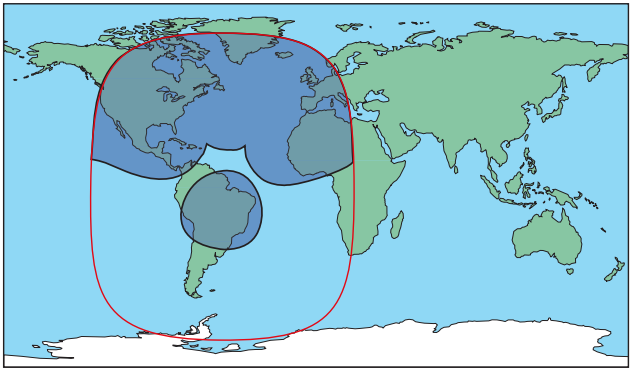
The antenna performs an hemispheric search at antenna elevation angles varying within 0° through 90°.

Satellite Coverage Map

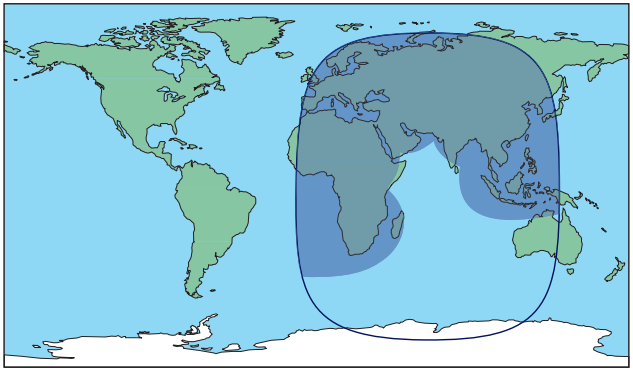


Coverage map for each Ocean Region

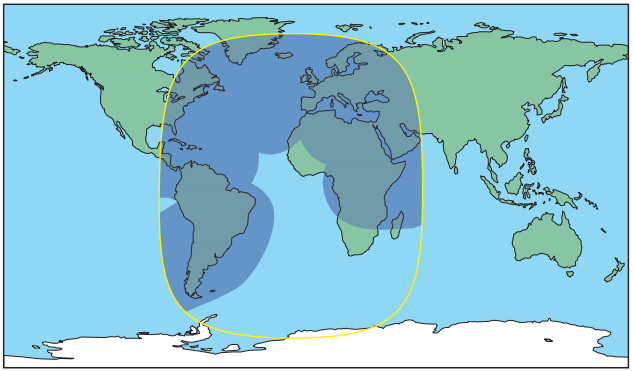
AOR-W



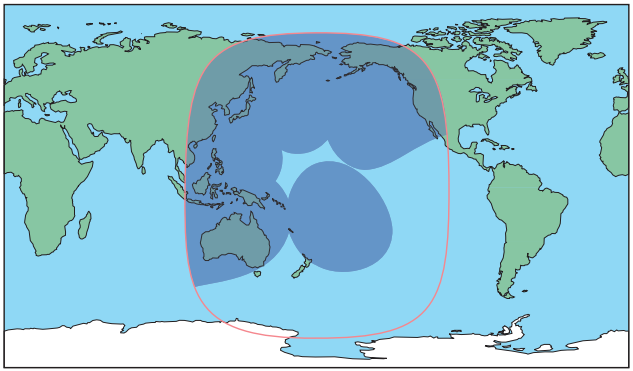
IOR



AOR-E



POR



Phone setup (Nera ISDN Handset)

Active MSN (Multiple Subscriber Number)

When making a call, the device connected to NWC Voyager identifies itself locally by its MSN number.

The first Nera ISDN Handset connected has the following MSN numbers:

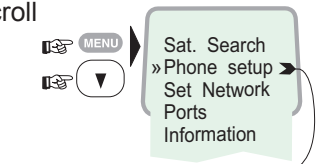
Terminal Id	*MSN number*	*Speech quality*
01	20	4.8 Speech
91	30	64 K Speech

Keyclick

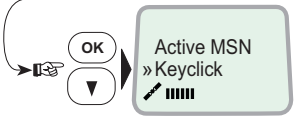
When activated, a click is heard when pressing a key.

The keyclick can be turned on/off as follows:

1 Open the **MENU** and scroll down to **Phone setup**:

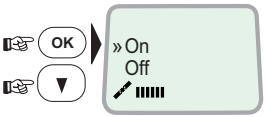


2 Select the **Keyclick** function:



3 Press (OK) and scroll to On or Off, as required:

4 Press (OK) to store the setting.



Ringer

The tone sound and level heard when the phone rings may be selected as follows:

1 Open the **MENU** and select **Phone setup > Ringer**:

2 Press (OK) to select the **Tone** function:

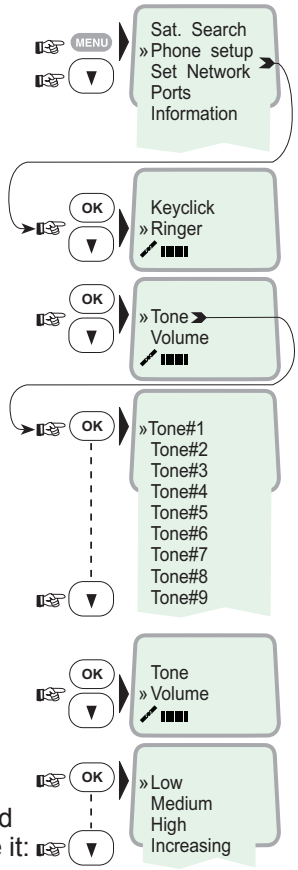
3 Press (OK) again and scroll down to required tone:

Press (OK) to store the selected one.

4 Select the **Ringer** function again and scroll down to the **Volume** function:

5 Pressing (OK) lists the choices:

Scroll down to required sound level, and press (OK) to store it:



Answer beep

NWC Voyager may be set to emit a signal in the handset when an outgoing call is answered. The signal will also sound when a call is transferred at the remote end.

The signal is not active during handsfree calls.

The answer beep can be turned on/off as follows:

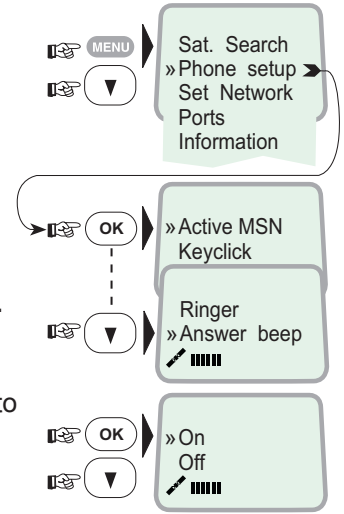
1 Open the **MENU**: scroll down to **Phone setup**, and

select the **Active MSN** function:

2 Scroll down to the **Answer beep** function:

3 Press (OK) and scroll to On or Off, as required:

4 Pressing (OK) stores the chosen mode.



Backlight On/Off

The display and keypad backlight can be set to:

- **On**, permanently ON
- **Off**, permanently OFF
- **30 second**s ON when pressing a key or receiving a call, and stays ON 30 secs after last event.
- **Dimmer**, intensity adjustable in 10 steps.

Changing the setting:

1 Open the **MENU**: scroll down to **Phone setup**,

and

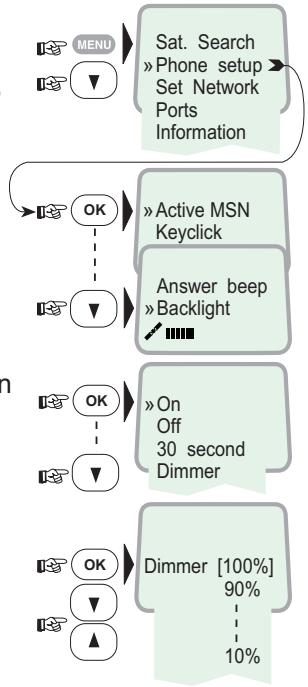
scroll down to the **Backlight** function:

3 Press (OK) and scroll down to required setting:

4 Pressing (OK) at **Dimmer** opens the backlight adjustment window:

Adjust with up/down arrows:

5 Press (OK) to store.



Protocol

NWC Voyager allows selection between the following ISDN protocols:

- **Euro ISDN** for connection to equipment conforming to the European ISDN standard (default)
- **NI-1** protocol for equipment conforming to the NI-1 standard (National ISDN-1).
- All ISDN devices and MCU must use the same protocol.

The check for current protocol:

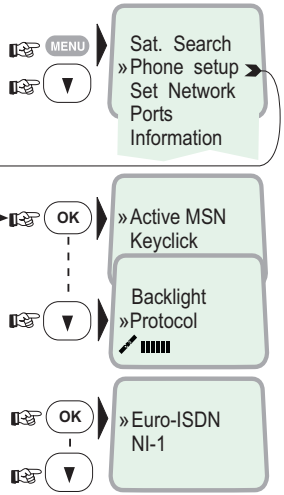
1 Open the **MENU**: scroll down to **Phone setup**,

and

select the **Protocol** function:

2 Press (OK) and scroll required protocol:

3 Pressing (OK) stores the chosen ISDN protocol.

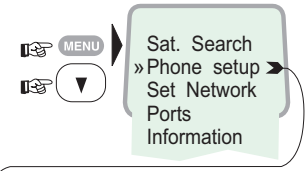


*To change the default setting in the MCU, see **User Guide > ISDN protocol configuration** on the CD.*

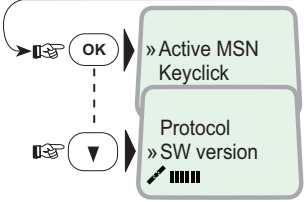
Software version

This function displays the Nera ISDN Handset software version:

1 Open the **MENU**: scroll down to **Phone setup**,



and



select the **SW version** function:

3 Press OK to read:

To read other software versions, see ***Information available*** *later in the manual.*

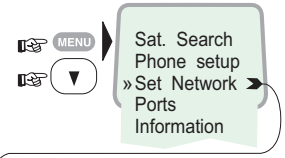
Selecting default Net service provider

The default Net service provider for a satellite (Ocean Region) is automatically used when dialing ship-to-shore.

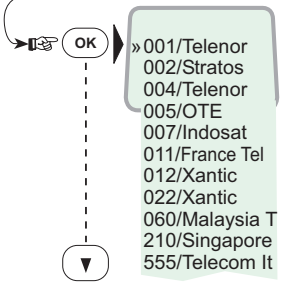
When using SIM card, selection of a default Net service provider is restricted to the one stored on the SIM card!

Changing default Net service provider:

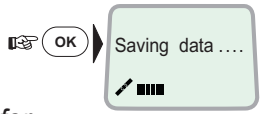
1 Open the **MENU**:
Scroll down to **Set Network**:



2 Scroll down to the required Net service provider:



3 Store the new Net service provider for the current Ocean Region:



To preprogramme Net provider for all Ocean Regions, vt-Lite Mobile must be used, see ***User Guide*** *on CD.*

Setting serial ports

The data speed, format and flow control for the **RS-232** serial ports **A** and **B** are set up as follows:

1 Open the **MENU** and scroll down to **Ports**:

*See **Overview** for available choices.*

2 Select the parameter to be set for Port A:

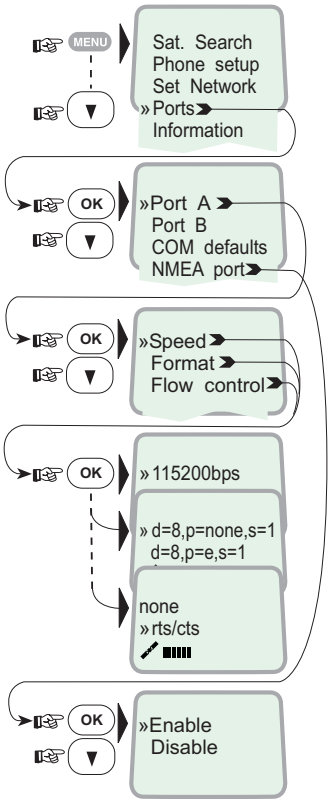
3 Select listed data:

Speed
115200bps (default):

Format
8 data bits, no parity and 1 stop bit (default)

Flow control
rts/cts (default):

4 Disable/enable NMEA port as required:



Port B driver switch

Select data speed, format and flow control as described for serial port A.

Switching the driver from RS-232B to RS-422:

6 Select **Ports**:

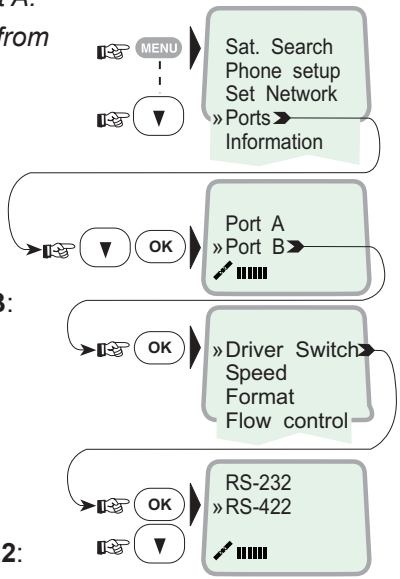
and

scroll down to **Port B**:

7 Open the **Driver switch** function:

and

scroll down to **RS-422**:



*The **RS-422** terminal block is now activated for connection of e.g. PC using cables of up to 100 m.*

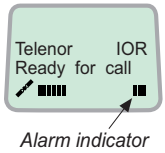
*The **RS-232** serial port **B** is disconnected.*

Information available

Open the menu and scroll down to read various information, as indicated (examples):

Alarm

The alarm indicator flashes when an alarm condition occurs:

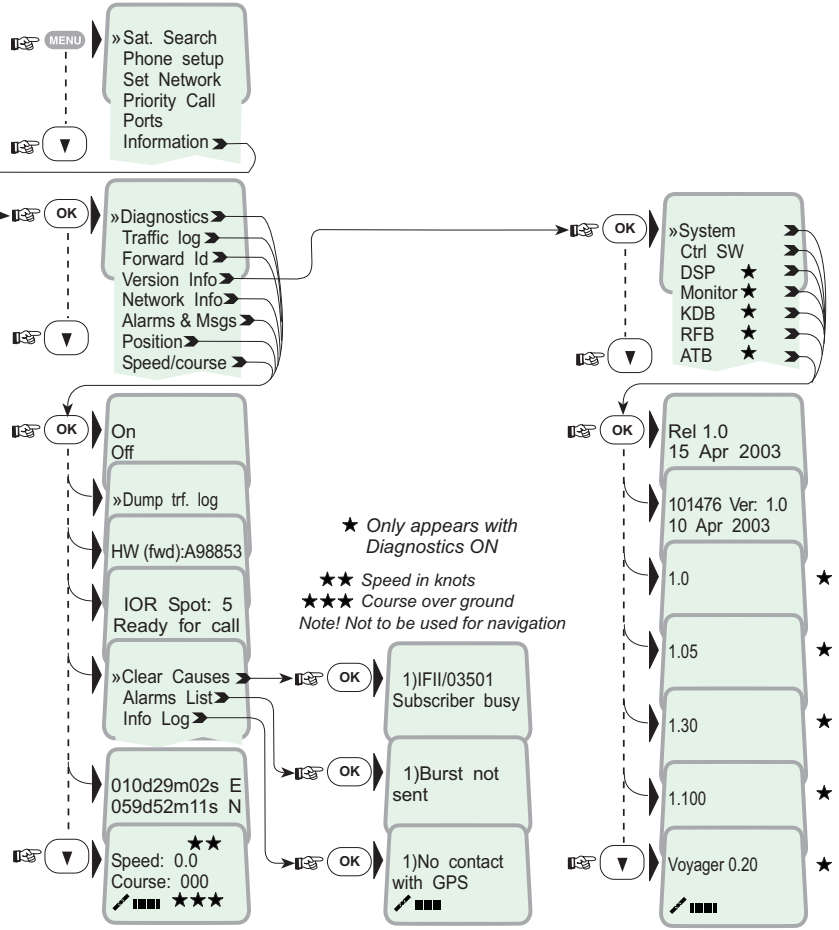


Alarm indicator

The indicator stops once the alarm has been read in the Display Handset by pressing MENU ***> Information > Alarms & messages.***

The indicator continues to be displayed if the alarm condition persists.

The red alarm indicator on the MCU (see next page) flashes in step with the alarm indicator in the display.



General

NWC Voyager provides access to telefax service:

- Group 4 fax at 64 kbps via the ISDN connector.
- Group 3 fax via the Terminal Adapter.
- Group 3 fax using 3.1 kHz Audio service.

Limitations

NWC Voyager is fully compatible with the world's leading telefax machines and telefax software standards. However, transmission may not be possible through some of the telefax machines available on the market. Please check with your Net service provider/Nera Distributor before purchasing a telefax for use with NWC Voyager.

Installation

For installation of Terminal Adapter, *see* ***Appendix B***.

Transmission

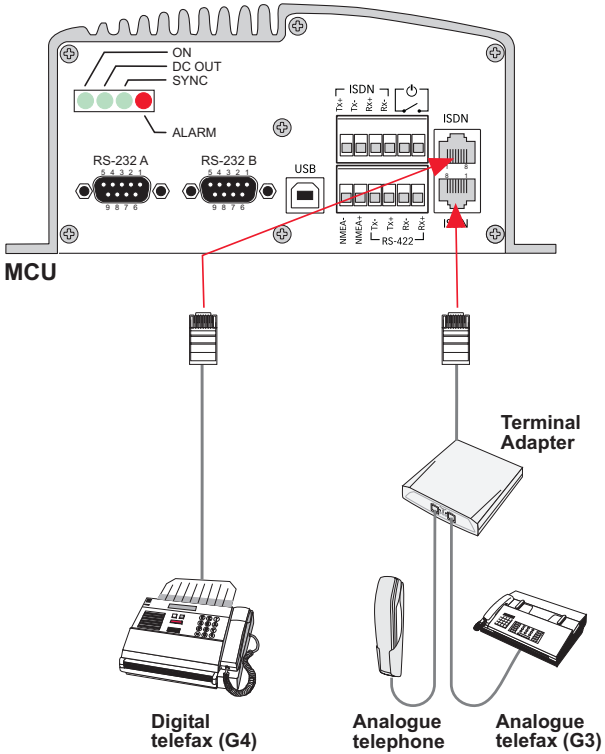
To send a fax, use the same dialing sequence as when making a call. *See* ***Various call procedures*** *earlier in this manual.*

> *Note! On a telefax with keypad, enter* **#** *as the last digit before starting transmission.*

G3: telefax transmissions normally take 1 minute per standard text page using standard resolution. Using superfine or halftone resolution will double the transmission time. To save time, avoid using a separate cover page.

If a call failure should occur while sending a multi-page document, re-send only the failed pages.

G4: one page normally takes 10 seconds (G4 fax is required in both ends of the line).



Data transmission

NWC Voyager provides access to the international ISDN/PSTN network data services through its built-in modem capability.

The service is suitable for applications such as high-speed file transfer, video, e-mail and internet.

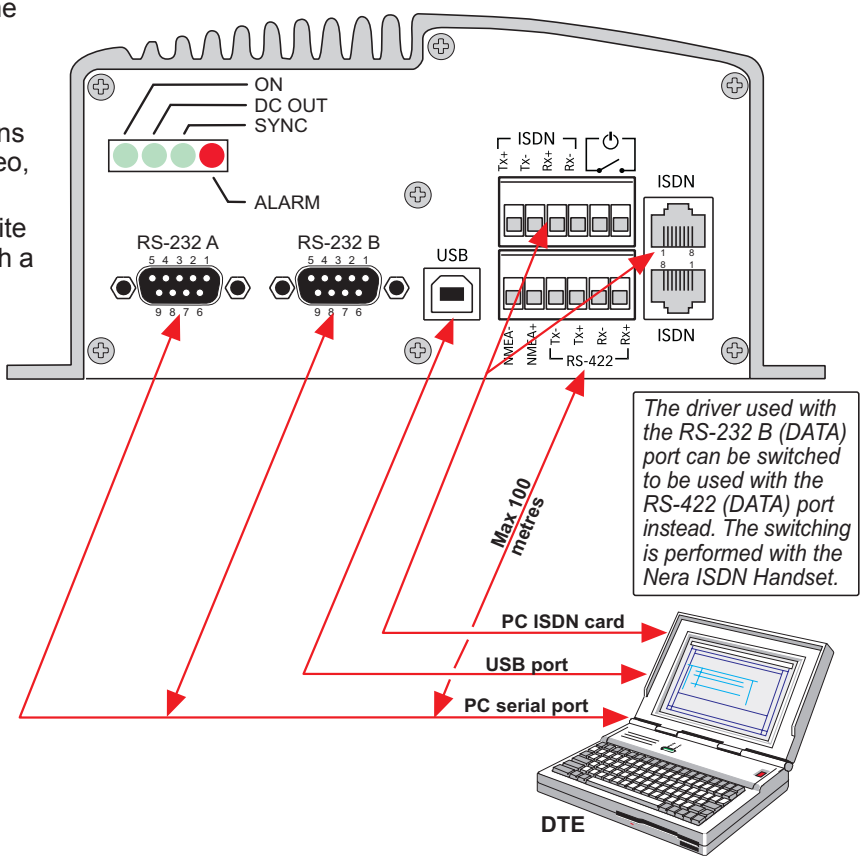
The transmisson rate over the satellite is 64 kbps, and any standard PC with a serial port can be used.

Ports supporting 64 kbps data service (UDI):

- RS232A
- RS232B / RS422
- USB
- ISDN

Dial number 28 for fixed 64 kbps internet services.

For other connections and configurations, see ***Applications > Mobile Data Service via RS232 or via USB*** *on the CD.*



Mobile Packet Data Service

The MPDS service can be efficient for applications such as:

- E-mail
- Internet/intranet
- Navigational updates
- Vessel telemetry transmission
- Database queries
- E-commerce

The user *only* pays for the *amount* of data sent over the network, and not for the time connected.

Ports supporting MPDS:

- RS232A
- RS232B / RS422
- USB

No configuration is needed!

Dial number **94# to set up an MPDS call.

*See **Applications > MPDS via RS232 or via USB** on the NWC Voyager CD.*

Installing the PC program

The **vtLite Mobile** program allows NWC Voyager to be operated or configured from a PC, including functions such as:

- Phone book
- Traffic log
- Configuration of ports (ISDN/USB/RS-232/RS422)
- Configuration of the MCU

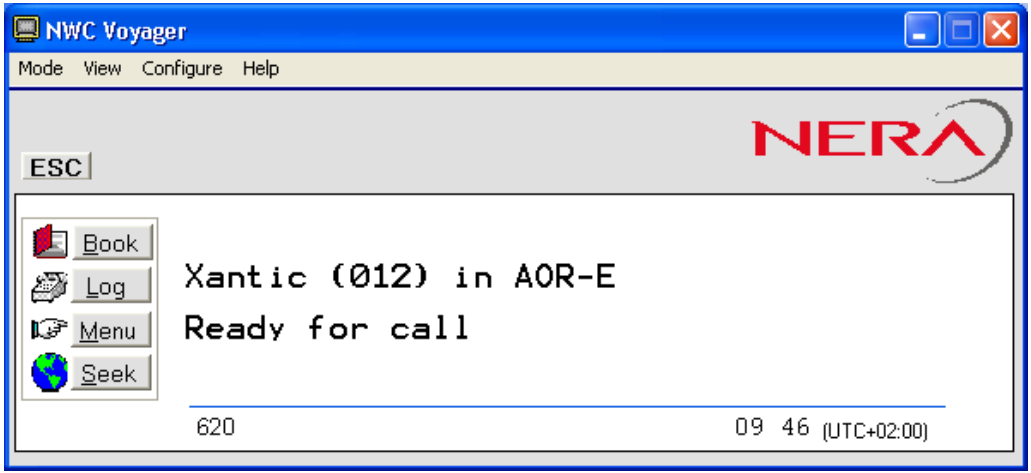
Connect the PC as indicated on the previous page.

The **vtLite Mobile** program is available on the enclosed CD and must be installed on the PC hard disk.

For an explanation of the functions, *see the **User Guide** on the CD*.

Close any Acrobat Reader program open on the PC before proceeding.

See next page.



Nera vtLite PC program

Procedure:

1 Insert the CD :

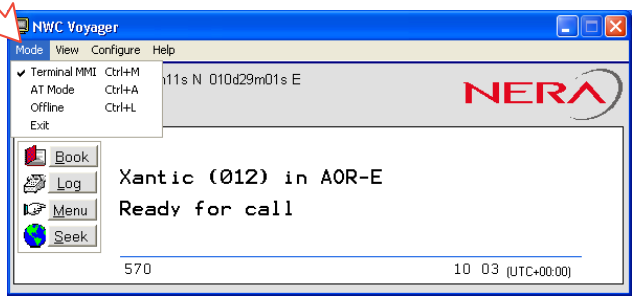
*The Start Page opens automatically in a few seconds. (Alternatively, open the Acrobat file "**NWC Voyager_StartPage**" on the CD. If necessary, install Acrobat Reader by clicking "**Ar505enu.exe**" in the "**SW Installation**" folder.)*

2 Click "**Software Installation**" and then "**vtLite Mobile**". Allow files to load on to the PC hard disk. The installation of the program starts automatically when files have been loaded.

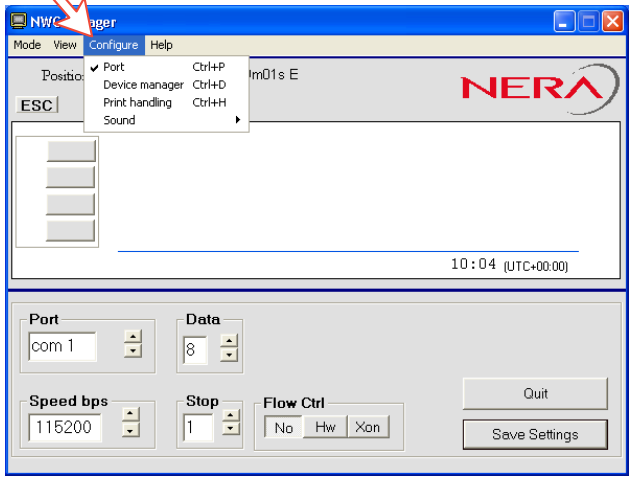
3 Connect the serial cable between the PC serial port and one of the RS-232 ports on the NWC Voyager Main Communication Unit. *See **DATA SERVICE**.*

4 Switch ON the Main Communication Unit.

5 Start the vtLite Mobile program by clicking **Start>Programs>vtLite Mobile**.
If no contact, click **Mode**>**Terminal MMI**.



6 Click **Configure** > **Port** to check the port settings.



7 The USB port can be used to run vtLite Mobile. The USB modem driver required is accessible on the CD: **Nera Generic USB Modem** (usb4nera.inf)

General

No regular maintenance is required of the NWC Voyager satellite terminal.
It is recommended, however, to clean the antenna radome every once in a while.

Problem	Probable cause	Action
1. The NWC Voyager MCU power ON indicator does not light up:	The Main Communication Unit is not switched ON	• Set the ON/OFF switch to ON (rear panel). • Switch OFF, wait 10 secs and switch back ON
	Power is not connected	• Check that the power cord is properly connected to 10.8 - 32 VDC power source. • Set the external ON/OFF switch to ON, or verify power switch jumper on front panel connector. *Diode info: ON=DC-in OK (>10.8VDC), 48VDC=Internal DC Power output 48V OK*
2. The Nera ISDN Handset display freezes or stays completely blank:	The handset cord is not connected or damaged	• Check that the handset cord is properly connected and inspect the cord. • Power MCU off/on • Disconnect cord from MCU and connect it again.
3. NWC Voyager cannot find the satellite:	No or weak signals. Sight to satellite obstructed	• Check that no obstacles block the free sight to the satellite.
4. Low signal reception:	Obstructions	• The signal strength indicator should preferably exceed 570 in vtLite Mobile, or 5 bars in the Handset display. • Check that no obstacles block the free sight to the satellite. • Restart the search for any satellite, or try a satellite in a specific Ocean Region.
5. NWC Voyager functions abnormally:		• Turn off power and disconnect power, and switch on again. • Verify correct voltages to the MCU: 10.8 - 32VDC. • Download new software from the Nera website. (preferably done by a Nera Regional Service Centre)

Problem	Probable cause	Action
6. Unsuccessful call:	NWC Voyager is not commissioned.	• Check clear cause • Call the Net Service Provider.
	The following messages appear in the vtLite display: "No response from net". (HS: Disconnected)	• Check that the correct Net service provider is shown in the display. • The NWC Voyager terminal is not commissioned. • Verify in Nera ISDN Handset menu >Information>Network info>(scroll down) successful=commissioned, failed=not commissioned.
	The called party is busy. "Subscriber busy" appears in HS display	• Wait for some time and try again. • Call another subscriber.
7. Problems with telefax:	Incomplete dialing	• Remember to press "#" as last digit before starting transmission. • Instead of "#", try to enter: 902 + 00 + country code + subscriber number.
	Fax fails to work in Global Beam (0)	• Works in spot beam only.
	Service not commissioned	• *See problem 5.*
	System transmission delays	• The OFF-HOOK time for handshake should be as long as possible (e.g. 2 minutes). When the fax machine is called, ringing time should be set to minimum (e.g. immediate answer). • Set error correction to OFF • Try a different fax machine. Check that the telefax (Group 3) is properly connected to the Nera Terminal Adapter. • Contact the Distributor

Problem	Probable cause	Action
8. No GPS: option	GPS alarm, or GPS not received	• Wait up to 15 minutes. The GPS may use up 15 minutes if NWC Voyager has switched off for more than 6 hours.
9. Problems with data communication:	Wrong PC settings	• Check the PC program settings: speed 115200 bps, 8 data bits, 1 stop bit, no parity if RS232 is used (default settings in NWC Voyager MCU). • Shore/land has not ISDN line or does not support UDI service. • *Read Nera Application guide on Voyager CD.* • Contact the PC applications vendor for help.
	Data Service fails in Global Beam (0)	• Works in spot beam only.
10. Routing of calls:	MSN number not entered properly	• Make sure that the MSN number entered into Voyager with the Device Manager, is also entered into connected equipment. Some devices, e.g. Nera ISDN Handset, can be programmed with multiple MSNs. • Call Handset to verify MSN of other phones. • Read Handset MSN by pressing "R"-button.
11. Problem with local calls:	Wrong dialing	• Check that you call the correct MSN number. If Access Code is used, you need to enter this code first. • [*] [*] MSN [#]
12. Problem with call transfer		• Phone does not support "R"-button. • Not possible to transfer call from analogue to ISDN.

AC Alternating Current
AOR-E Atlantic Ocean Region East.
AOR-W Atlantic Ocean Region West.
Azimuth horizontal direction angle between north and, e.g. the direction to the satellite.
Bit rate the number of bits transmitted per second (bps).
Byte = 8 bits
CHV2 higher access level on the SIM card, corresponding to NWC Voyager "owner" level.
DC Direct Current.
DID Destination terminal IDentification.
DSP Digital Signal Processor.
DTE Data Terminal Equipment.
Elevation vertical angle to the satellite, i.e. the height of the satellite above the horizon.
Fleet Inmarsat's single integrated voice, fax, Mobile Data Service and Mobile Packet Data Service.
FWD ID forward Id, telephone network identity.
GAN Inmarsat Global Area Network.
Home LES Home Land Earth Station gives access to MPDS service like Internet / e-mail and handles MPDS billing system.
IDU Indoor Unit
IMN Inmarsat Mobile Number, a unique 9-digit number which identifies each device connected to NWC Voyager.
Inmarsat International Maritime Satellite Organisation.
IOR Indian Ocean Region.
ISDN Integrated Services Digital Network.
ISN Inmarsat Serial Number, individual number assigned to each NWC Voyager terminal.
ITU International Telecommunications Union
Kbps Kilobits per second.
LAN Local Area Network.
LES Land Earth Station, a station that interconnects fixed telecommunications networks with the Inmarsat system; may also be called a CES (Coast Earth Station) or a GES (Ground Earth Station).
M4 Inmarsat Multi-Media Mini-M.
MES Mobile Earth Station, a user terminal for an Inmarsat system; the NWC Voyager terminal is an MES for the Inmarsat GAN system; MES may also be called SES (Ship Earth Station) or, if on aircraft, AES (Aeronautical Earth Station).
MPDS Inmarsat Mobile Packet Data Service.
MSN Multiple Subscriber Number, the extension number that connected equipment responds to. Also used for internal calls.
NCS Network Coordination Station, station that supervises all messages and signals sent in the Inmarsat system; one in each Ocean Region.
OID Originating terminal IDentification.
Ocean Region the coverage area of an Inmarsat satellite within which NWC Voyager may communicate.
ODU Outdoor Unit
PABX Private Automatic Branch Exchange.
PIN Personal Identification Number.
POR Pacific Ocean Region.
PPP Point-to-Point Protocol, protocol used for serial data communication via the NWC Voyager RS-232 or USB port.
PUK Personal Unblocking Key, code that allows unblocking a SIM card.
RF Radio Frequency.
R LES Regional Land Earth Station sets terminal in MPDS list.
S/A operator StandAlone operator who maintains connectivity in the event of Network Coordinating Station failure.
SBS Shared Base Station assigns channels to the MPDS user and handles the MPDS communication.
SIM Subscriber Identity Module.
SMS Short Message System.
Spot Beam an Ocean Region is divided into sub-regions, each “spotlighted” by a beam from the region satellite.
Terminal ID (OID/DID) different IDs for different Inmarsat services (e.g. 01 = 4.8 speech)
Terrestrial Network a fixed telecommunications network, such as a telephone network or a data network, which connects to the Inmarsat system at an LES/NCS.
UDI Unrestricted Digital Information.
USB Universal Serial Bus.
UTC Coordinated Universal Time, referenced to Greenwich Mean Time (GMT).

Safety Warnings, Cautions and Warranty

General

To avoid interference, do not run cables parallel to AC wiring, or near fluorescent lights or other high magnetic or electrical fields. Interference from this kind of sources causing equipment to be faulty or fail working properly will automatically void warranty conditions. Access to the interior of the equipment shall be made by a Nera qualified technician only. *The equipment should preferably be installed by a Nera SatCom approved Installation & Service Agent.* Warranty is not valid until the "Nera SatCom AS Warranty Certificate" (at the back of the Registration and Warranty Certificate booklet enclosed with the equipment) is signed by the approved Installation & Service Agent, and returned to Nera SatCom.

Warranty seals

The Main Communication Unit is sealed with three labels: . *The warranty is void if seal is broken.*

Grounding

Connection to all type of equipment meant for operation together with Nera NWC Voyager should be done while the unit is powered off. Peripheral equipment using mains shall be connected to a grounded AC power socket.

Cables and connections

Cables longer than 5 metres must be shielded. All peripheral equipment must be grounded.

- ISDN telephone	100 m	0.22 mm^2 min
- Analogue telephone	150 m	0.22 mm^2 min
- USB	5 m	Standard cable
- RS-232	3 m	Standard cable
- RS-422	100 m	0.22 mm^2 min

Always follow the installation guidelines described later in this manual for each type of interface.

Ventilation of the Main Communication Unit

Ambient temperature range: -20°C - +55°C.

To ensure adequate cooling of the MCU a 10 cm unobstructed space must be maintained above and below the unit.

*See "**Placing the Main Communication Unit (MCU)**".*

Failure to comply with the above rules for installation will automatically void the warranty.

Location of Antenna Unit

Avoiding obstructions
The antenna has ±10° horizontal and ±15° vertical beamwidth at 3 dB.

The antenna ideally requires a free line of sight in all directions.

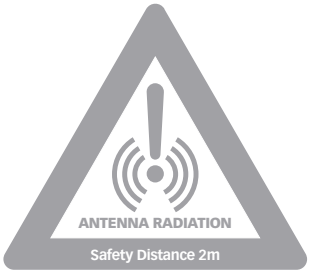
Any obstruction will cause blind sectors, resulting in signal degradation or even loss of communication with the satellite.

Degradation of the satellite signal can only be completely avoided by placing the antenna higher than any obstructions. This is often not feasible and a compromise must be made to reduce the number of blind sectors and cost of installation.
The degree of signal degradation depends on the size of the obstructions; the distance to them must therefore be considered.

Preferably, all obstructions within 3 m of the antenna should be avoided. Obstructions less than 15 cm in diameter can be ignored beyond this distance.

Avoiding interference
Do not locate the Antenna Unit close to interfering signal sources, or in such a position that the source (e.g. radar antenna) radiates directly into the NWC Voyager antenna.

Antenna radiation safe distance



Coax cable

A 7.5 metre coaxial cable type RG-223 (103154) is supplied as standard.
For greater lengths, see the table below which lists suitable double screened coax cables.

The coax cable should be secured by laying the cable in a tube and/or by fastening the cable to avoid damage.

Optional antenna cable

Double screened 50 ohm coaxial cable must be used for connection between the MCU and Antenna Unit. A "pigtail" is required in each end for the RF 1/2" 50 type cable.
The maximum length of the coax cable is limited by the DC and RF loss through the cable:

Maximum DC loss: R loop 4.0 ohms

Maximum RF attenuation at 1.6 GHz: < 20 dB

Power source

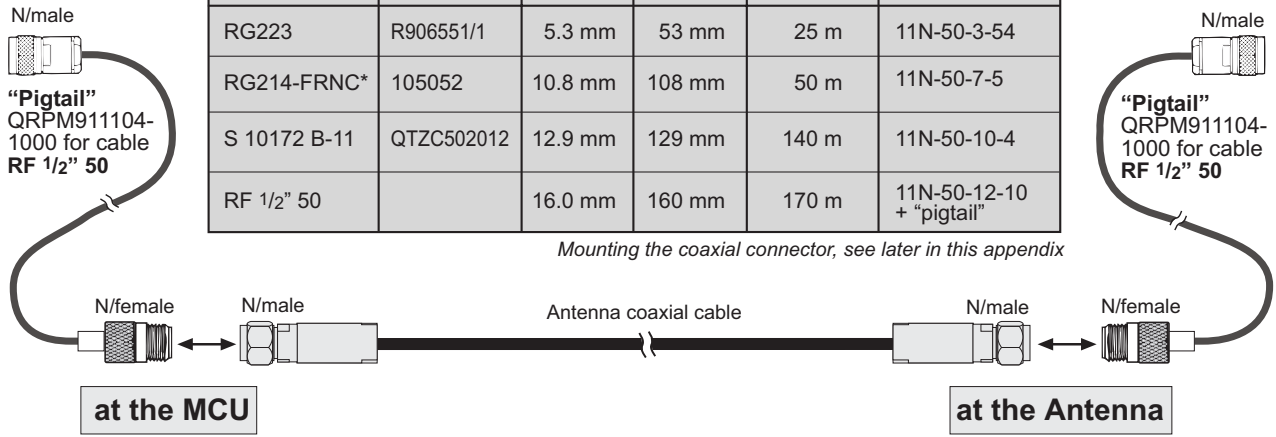
The equipment operates from 10.8 - 32VDC.
. Maximum power consumption:

- transmit mode: 110 W
- receive mode (idle): 40 W

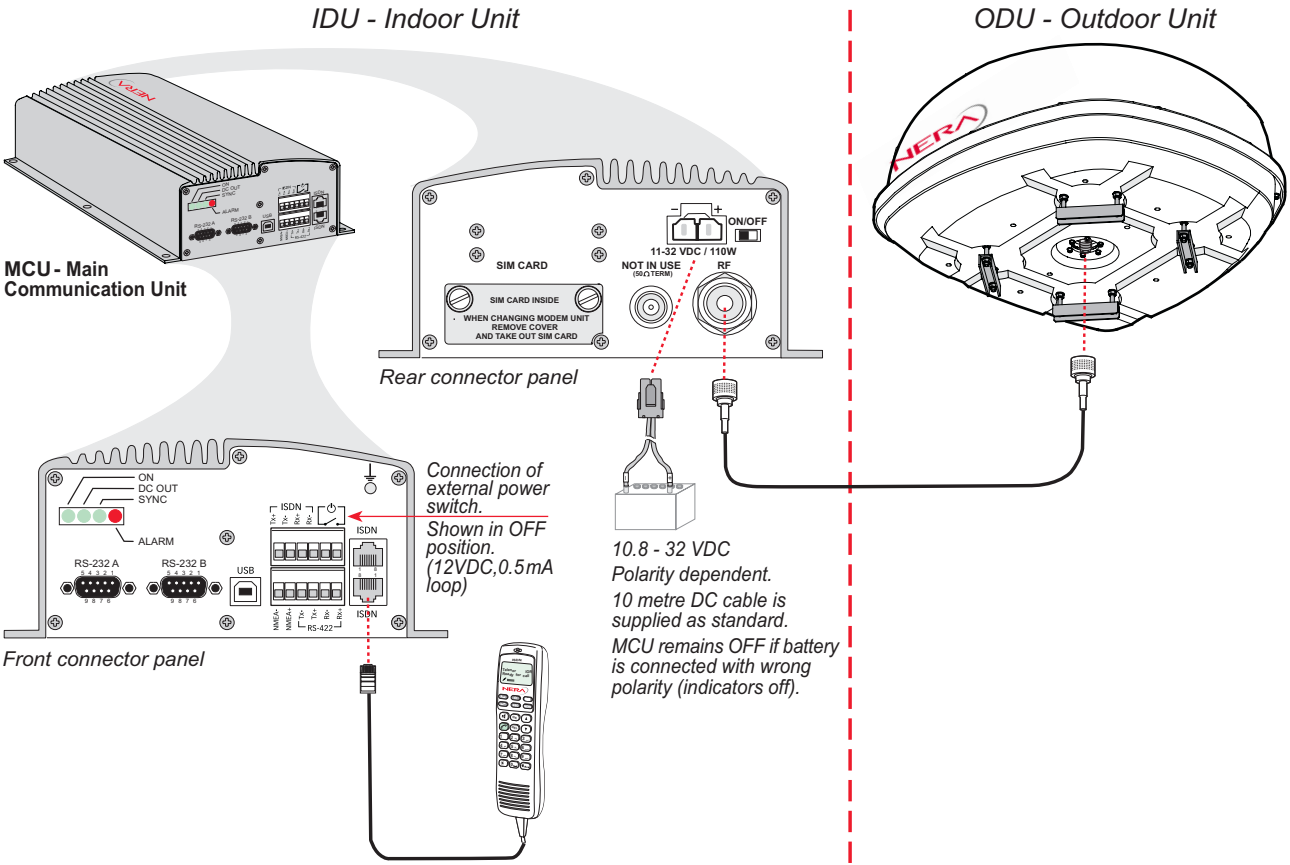
*Halogen-free/flame retardent/low smoke (FRNC: Flame Retardent Non-Corrosive)

Antenna cable	Nera part no.	Diameter	Bending radius	Max. length for 20 dB	Suitable coaxial connectors
RG223	R906551/1	5.3 mm	53 mm	25 m	11N-50-3-54
RG214-FRNC*	105052	10.8 mm	108 mm	50 m	11N-50-7-5
S 10172 B-11	QTZC502012	12.9 mm	129 mm	140 m	11N-50-10-4
RF 1/2" 50		16.0 mm	160 mm	170 m	11N-50-12-10 + "pigtail"

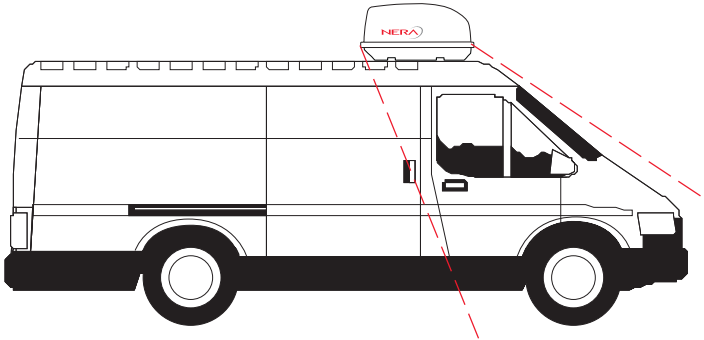
Mounting the coaxial connector, see later in this appendix

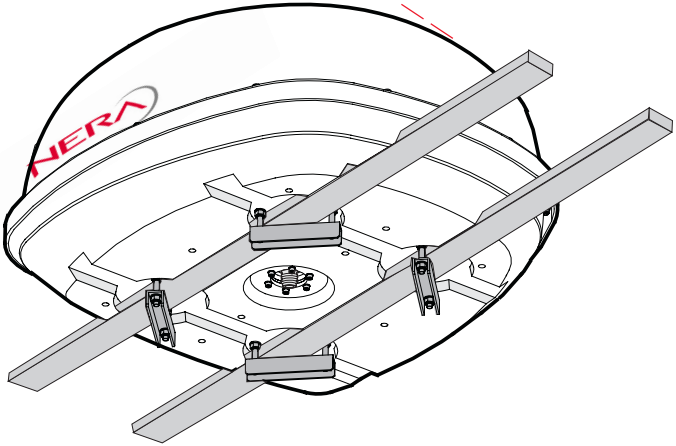


Connecting up



Mounting the antenna radome



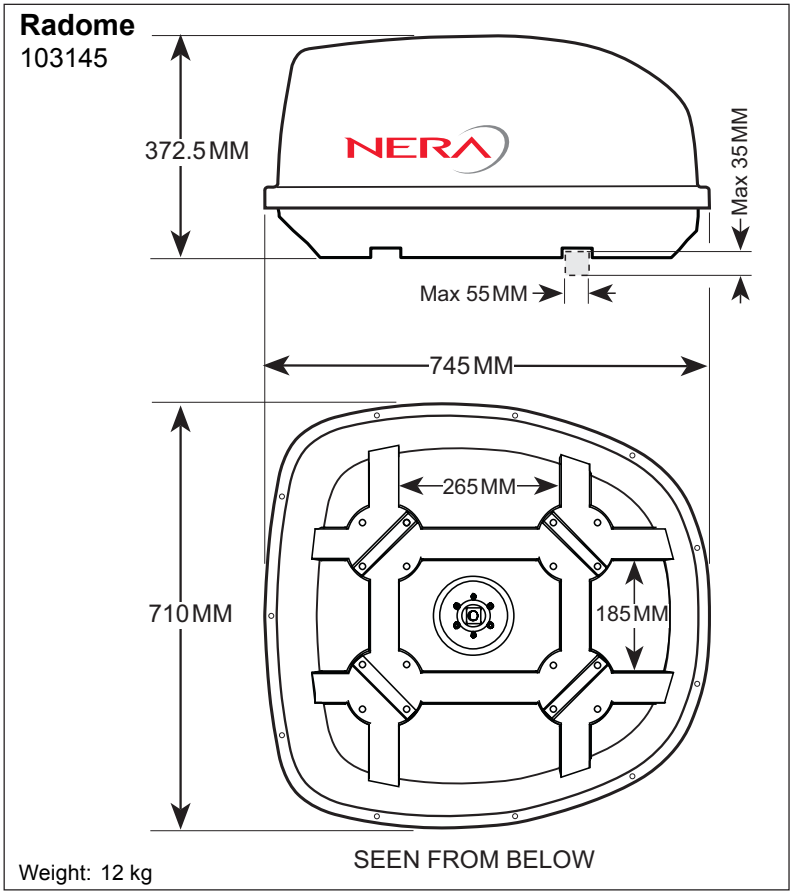


Example:

Load carrier installation of the NWC Voyager antenna radome.

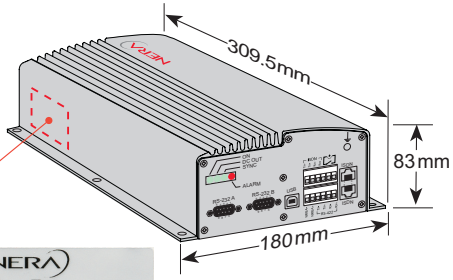
The rails can be mounted length-wise, as shown, or crosswise.

Outline dimensions



Main Communication Unit (MCU)

103780

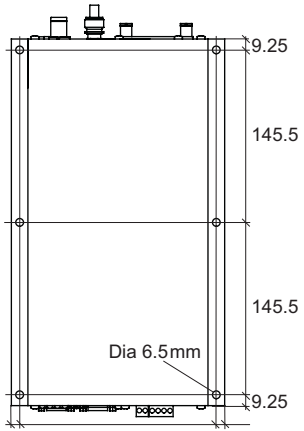


Example of serial no/ISN label:

Unit designation
Nera Part No.
Revision no.
ISN - Inmarsat Serial No.
Production Serial No,e.g.: 01 - 03040003

year month ser.no in month

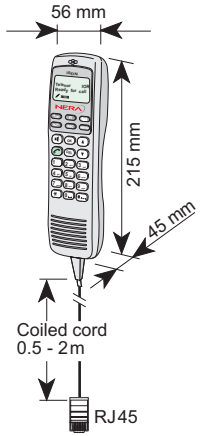
Important!
Ensure free space of at least 10 cm arround the MCU for adequate cooling, and to allow removal of the unit for service.



Weight: 3 kg

Nera ISDN Handset

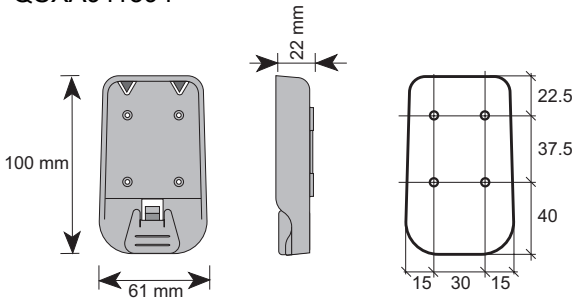
101654



Weight: 0.3 kg

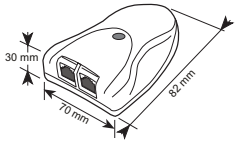
Handset holder/cradle

QSXA911394

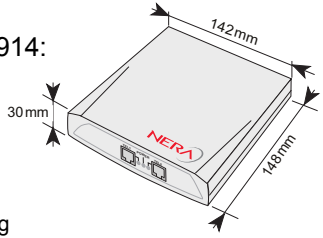


Weight: 0.06 kg

ISDN wall socket (option)
102176

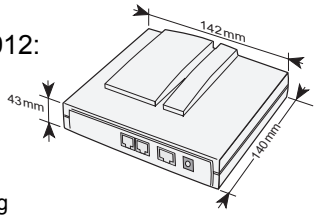


Nera Terminal Adapter
Analogue-to-ISDN TA with 2 analogue lines (option)
QDGY911914:



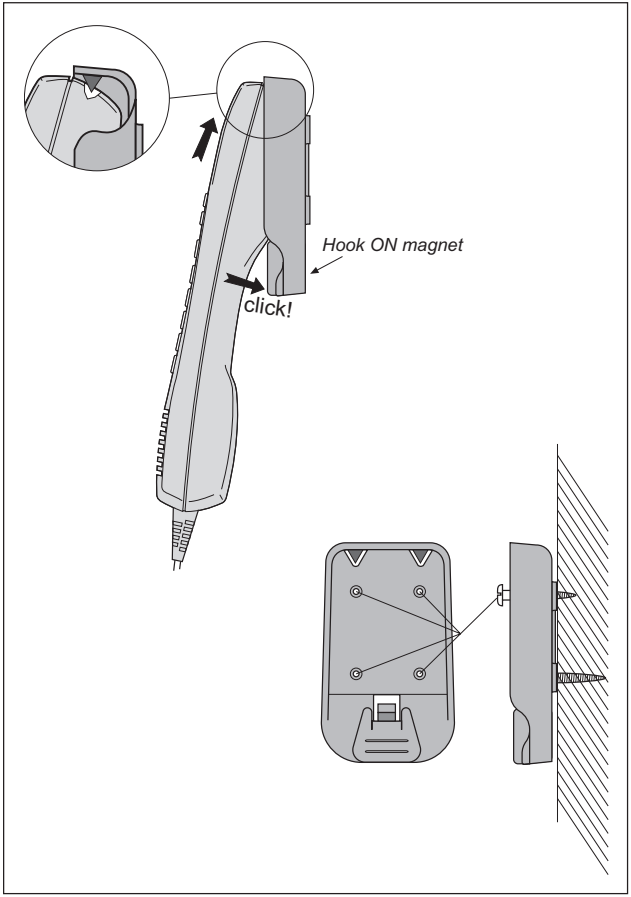
Weight: 0.1 kg

BCS iTA Terminal Adapter
Analogue-to-ISDN TA with 2 analogue lines (option)
QDGY911912:



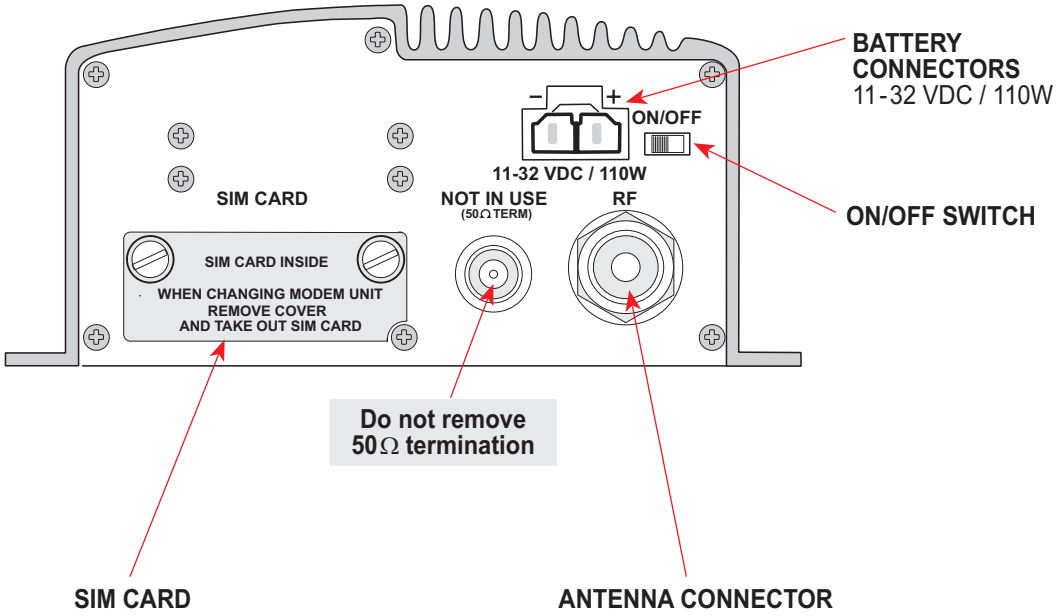
Weight: 0.2 kg

Mounting handset holder/cradle

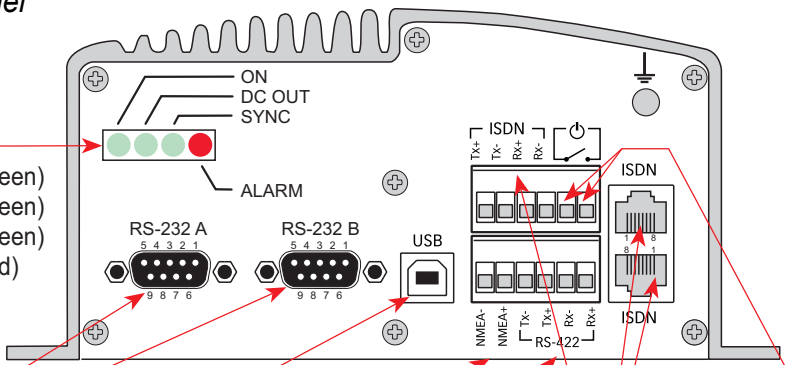


MCU connectors

Rear connector panel



Front connector panel



INDICATORS:
- power input ON (green)
- antenna power (green)
- satellite signal sync (green)
- alarm/info (red)

RS-232:
9-pin serial data ports for:
- operation and configuration from PC.
- software download (RS-232A)
- 64 kbps data service
- MPDS
- Serial printer (traffic logging)

USB:
serial data port for:
- operation and configuration from PC.
- 64 kbps data service
- MPDS

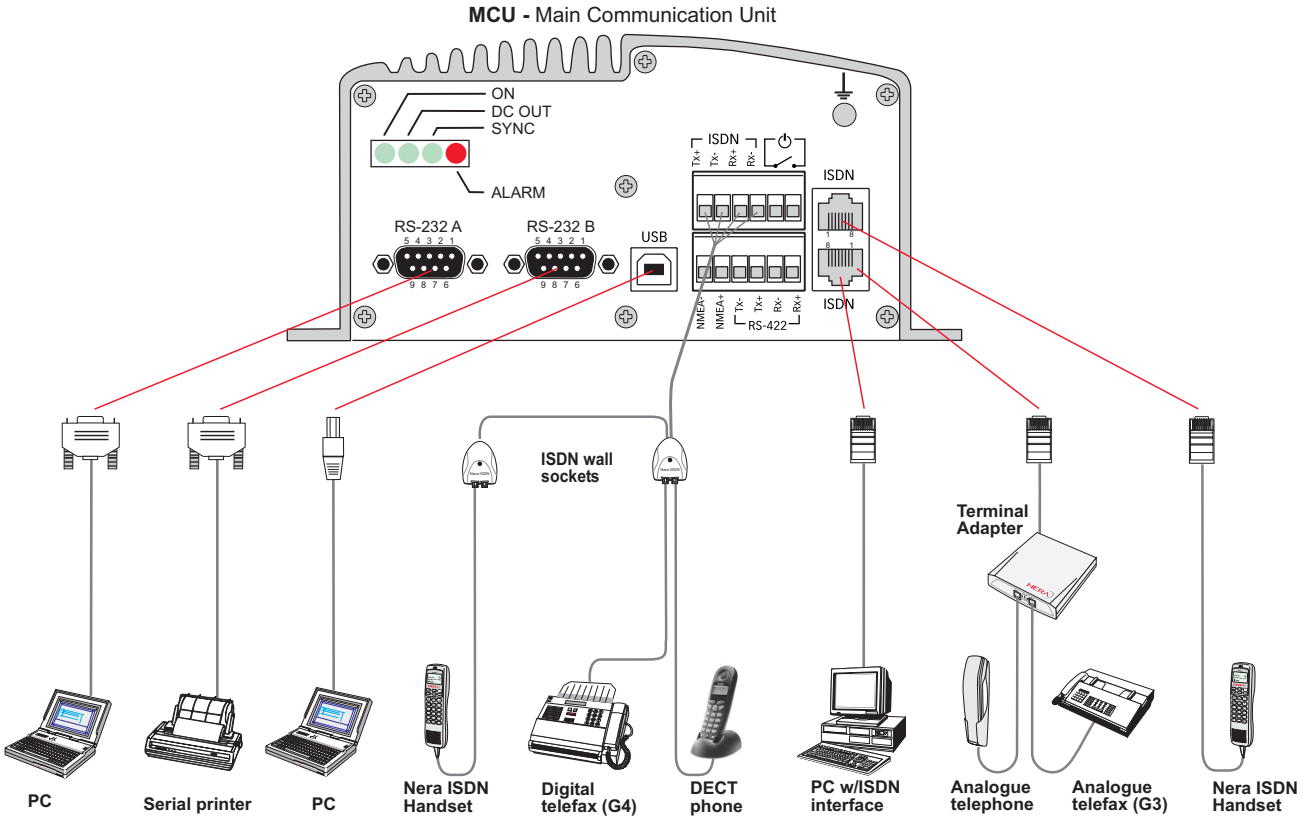
NMEA:
Connection of NMEA-0183 for external GPS input *(not required)*

RS-422:
serial port for connection of data equipment with up to 100 metres cables.
- operation and configuration from PC.
- 64 kbps data service
- MPDS

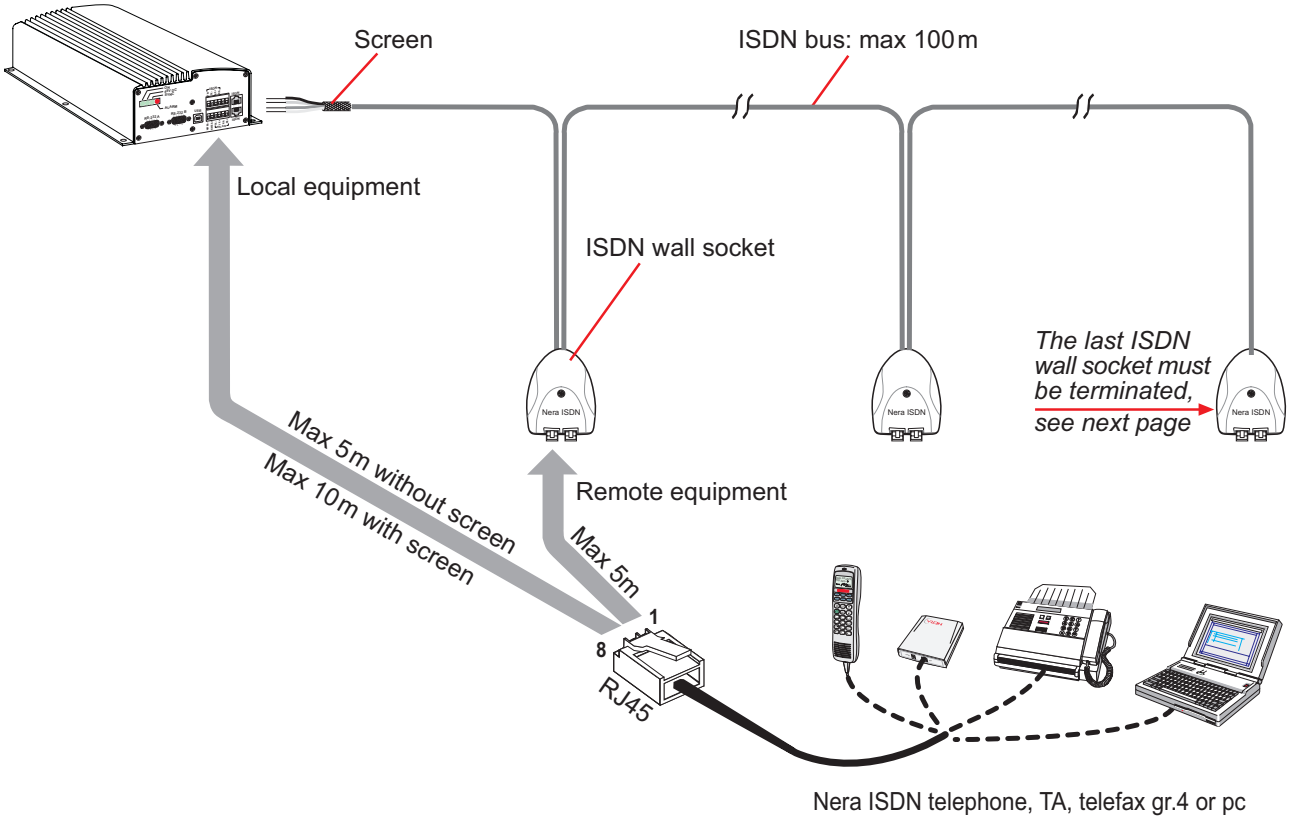
ISDN:
Connectors/RJ45
Services:
- 4.8 kbps speech
- 64 kbps speech
- 64 kbps data service
- 56 kbps data service
- audio service (3.1 kHz)

POWER CONTROL:
Terminals for connection of external power switch:
- Strapped if MCU power switch on rear panel is to be used
- MCU switch must be ON for external switch to function
- Can be connected to car electrical system
- Shortcircuiting of terminals turns ON MCU

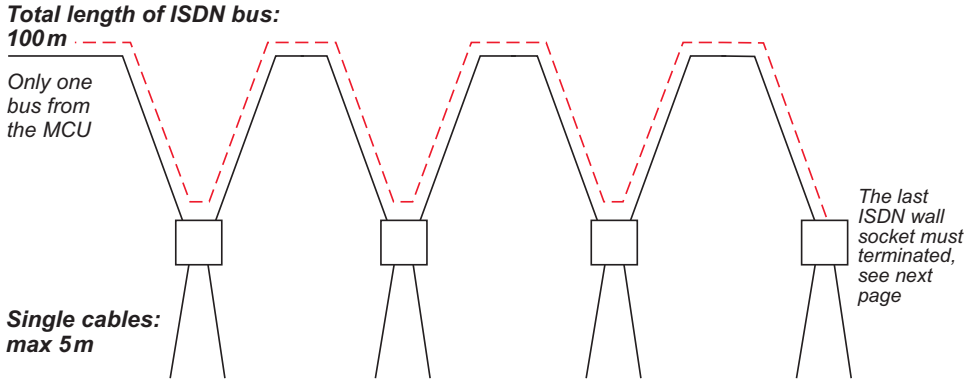
Connecting up - examples



ISDN telephones/equipment



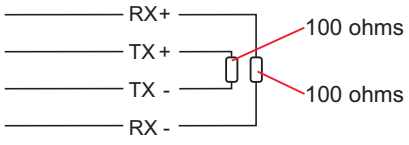
ISDN cable lengths


Total length of ISDN bus:
100 m
Only one bus from the MCU
The last ISDN wall socket must terminated, see next page
Single cables:
max 5 m

Up to 8 ISDN devices can be operated with Nera F55.

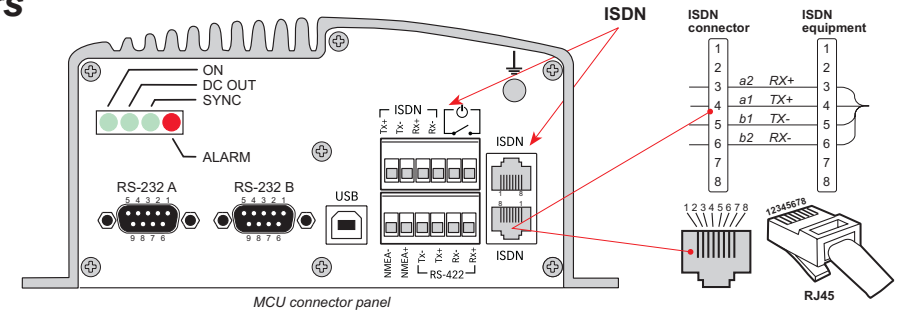
ISDN bus termination

When longer than 10 metres, the end of the ISDN bus must be terminated by two resistors as shown below. Only one bus/termination per MCU.
Be aware that only one ISDN cable is permitted to be longer than 10 metres.



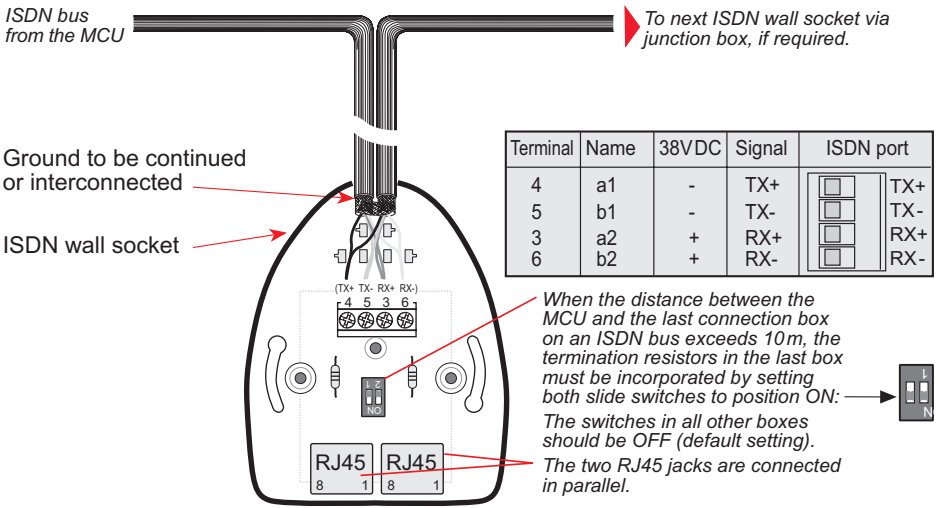
Alternative termination:
ISDN bus end plug

ISDN connectors



MCU connector panel

ISDN wall socket



Terminal	Name	38VDC	Signal	ISDN port
4	a1	-	TX+	TX+
5	b1	-	TX-	TX-
3	a2	+	RX+	RX+
6	b2	+	RX-	RX-

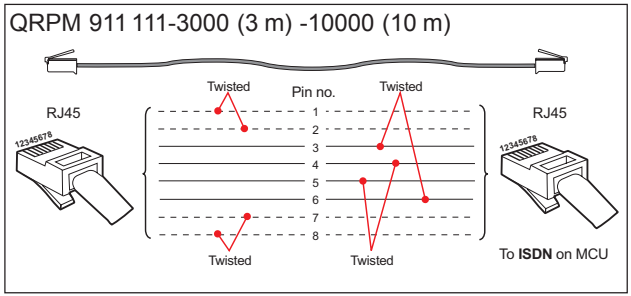
When the distance between the MCU and the last connection box on an ISDN bus exceeds 10m, the termination resistors in the last box must be incorporated by setting both slide switches to position ON:

The switches in all other boxes should be OFF (default setting).

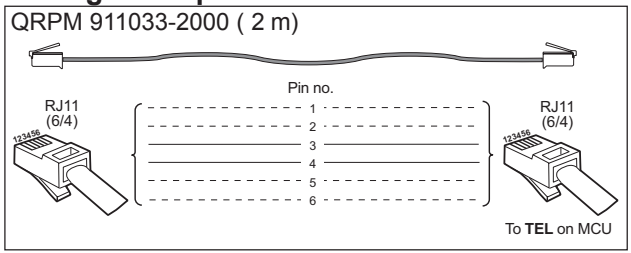
The two RJ45 jacks are connected in parallel.

Cable pinouts

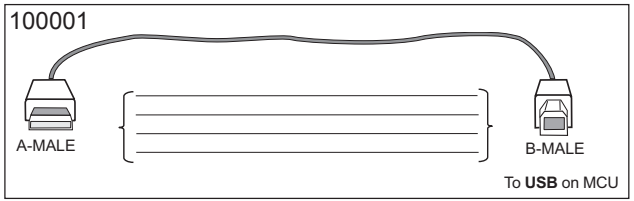
ISDN cable



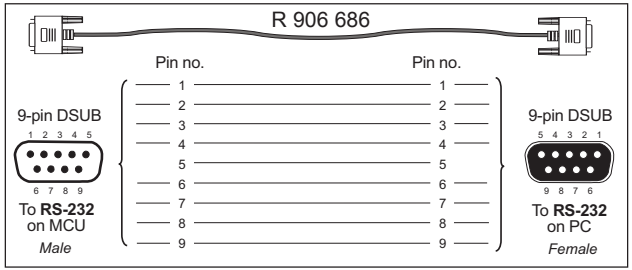
Analogue telephone cable



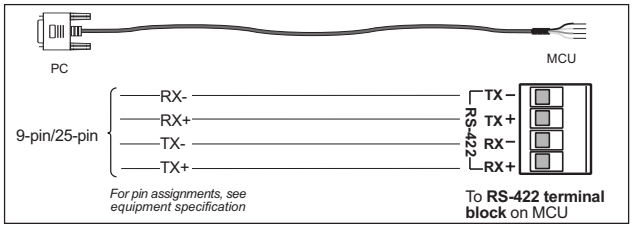
USB cable



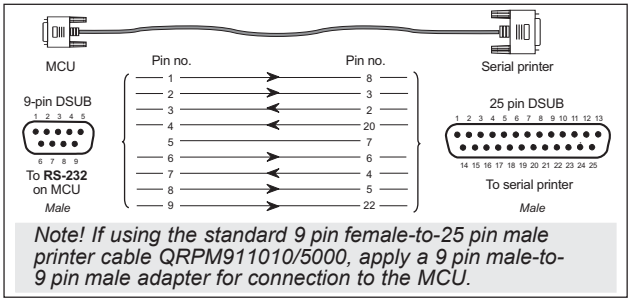
9-pin to 9-pin RS-232 cable (3 m)



RS-422 cable



9-pin to 25-pin printer cable

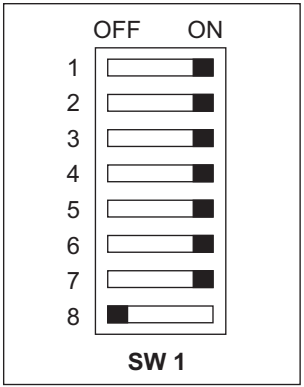


Note! If using the standard 9 pin female-to-25 pin male printer cable QRPM911010/5000, apply a 9 pin male-to-9 pin male adapter for connection to the MCU.

Serial printer settings

Switch bank 1

Switch no.	OFF	ON	FUNCTION
1	Even	Odd *	Parity
2	With	No *	Parity
3	7	8 *	Databits
4	X-on/X-off	Ready/Busy *	Protocol
5	Monitor	Circuit *	Test Select
6	Test	Print *	Mode Select
7		ON *	Busy line RTS (-9V) pin 4
8	Off *		

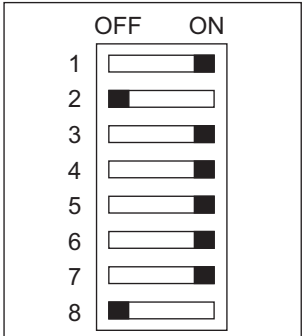


SW 1

* Correct setting

Switch bank 2

Switch no.	OFF	ON	FUNCTION
1		ON *	Baud rate 4.800
2	Off *		
3		ON *	
4	Invalid	Valid *	DSR I/P signal
5	512 Bytes	32 Bytes *	Buffer Threshold
6	1 sec.	200 ms *	Min. Busy Time
7	High when selected	High at Power on *	DTR Signal
8	*		Not Used



SW 2
Set for 4.800 bps
connected to printer port

NWC Voyager w/GPS (option)

GPS (Global Positioning System) is an option available for the NWC Voyager. The satellite terminal does not need GPS to operate.

There are two ways of feeding the system with GPS signals:

- Internal GPS, located in the antenna.
- External GPS signals fed via the NMEA input from a separate source in the vehicle.

Benfits of GPS:

- Calculates antenna elevation when searching.
- Finds the satellite faster.
- Updates the system real time clock automatically. Always exact time displayed in the vtLite editor.

NMEA-0183 input sources (complies with IEC 61162-1)

Intended for backup GPS. The internal GPS located in the antenna will always be used as the primary source. If the primary source is not receiving GPS signals, the external GPS input will be used (if enabled). NMEA-0183 input is not required for operation of NWC Voyager.

The NMEA-0183 (ver. 3.00) input is a 4 - 15 V current loop interface located on the connector panel of the MCU.

Data input format:

Baud rate 4800

Data bits 8, parity none, stop bit 1

Heading input is not required

Recognized GPS time, position and fix data format:

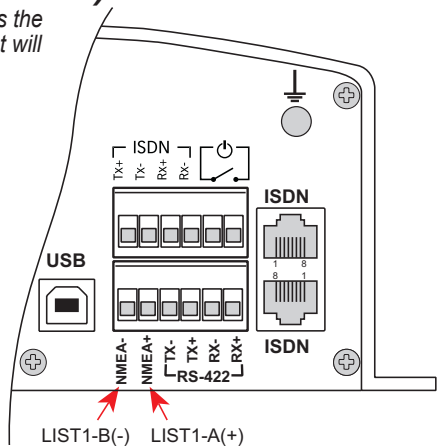
$--GGA,hhmmss.ss,llll.ll,a,yyyyy.yy,a,x,xx,x.x,x.x,M,x.x,M,x.x,xxxx*hh<CR><LF>

- UTC of position
- Latitude - N/S
- Longitude - E/W
- GPS quality indicator
- Number os satellites in use, 00-12, may be different from the number in view
- Horizontal dilution of precision
- Altitude re: mean-sea-level (geoid), meters
- Geoidal separation, meters
- Age of differential GPS data
- Differential reference station ID, 0000-1023

Recognized NMEA-0183 data format:

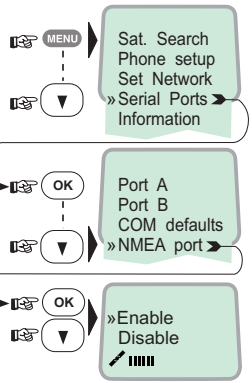
$--RMC,hhmmss.ss,A,llll.ll,a,yyyyy.yy,a,x.x,x.x,xxxxxx,x.x,a,a*hh<CR><LF>

- UTC of position fix
- Status: A=Data valid, V=Navigation receiver warning
- Latitude, N/S
- Longitude, E/W
- Speed over ground, knots
- Course over ground
- Date: ddmmyy
- Magnetic variation, degrees E/W
- Mode indicator



NMEA INPUT

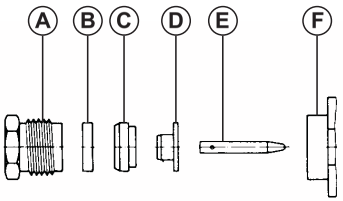
External NMEA is activated from the Nera ISDN Handset:

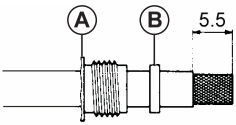


Mounting connector type 11N-50-3-54 (for cable RG223)

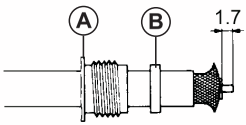
Tools and materials required:

- Stanley blade
- Scissors
- Solder Sn/Pb 60/40 activated rosin flux
- Spanner
  - 7 mm (74 Z-0-0-38)
  - 8 mm (74 Z-0-0-16)
  - 13 mm (74 Z-0-0-37)

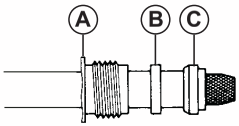




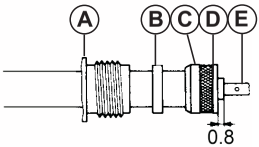
Slide **nut A and gasket B** onto cable.
Prepare cable according to diagram.
Caution: Do not damage braid.



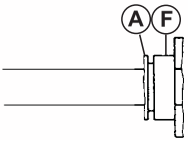
Push braid back and widen it slightly, but do not comb it out. Cut off dielectric 1.7 mm perpendicular to cable axis.



Taper braid towards center conductor.
Position braid **clamp C** so that its shoulder fits against cable sheath.



Fold back braid over **clamp C** and trim overlapping braid.
Slide **clamp D** underneath the braid.
Check dimension of 0.8 mm.
Heat inner **contact E** using a soldering iron (approx. 40 W) and flow small amount of tin into bore. Push cable inner conductor into bore, immediately remove soldering iron to prevent melting of the dielectric.

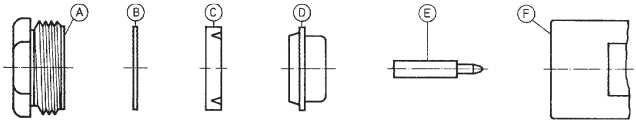


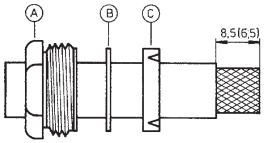
Push prepared cable into **connector body F** and tighten **nut A**.
Do not rotate cable in connector body.

Mounting connector type 11N-50-7-5 (for cables RG214 FRNC)

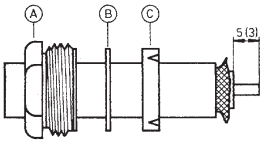
Tools and materials required:

- Stanley blade
- Scissors

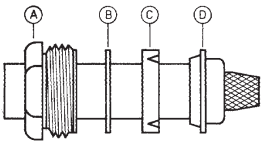




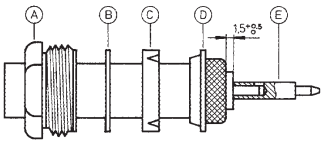
Slide **nut A, washer B and gasket C** onto cable. Remove 8.5 mm (6.5 mm for angle plugs) of jacket without damaging the braid.
Cables with double braid: Remove 9 mm (7 mm for angle plugs) of jacket.
Armoured cables: Slide two-piece armour clamp onto cable, instead of nut A. Remove 29 mm (27 mm for angle plugs) of armour.



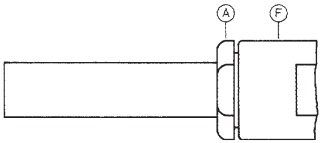
Push braid back and widen it slightly, but do not comb it out. Cut off dielectric 5 mm (3 mm for angle plugs) from end, even and perpendicular to cable axis.
Caution: Do not damage centre conductor.



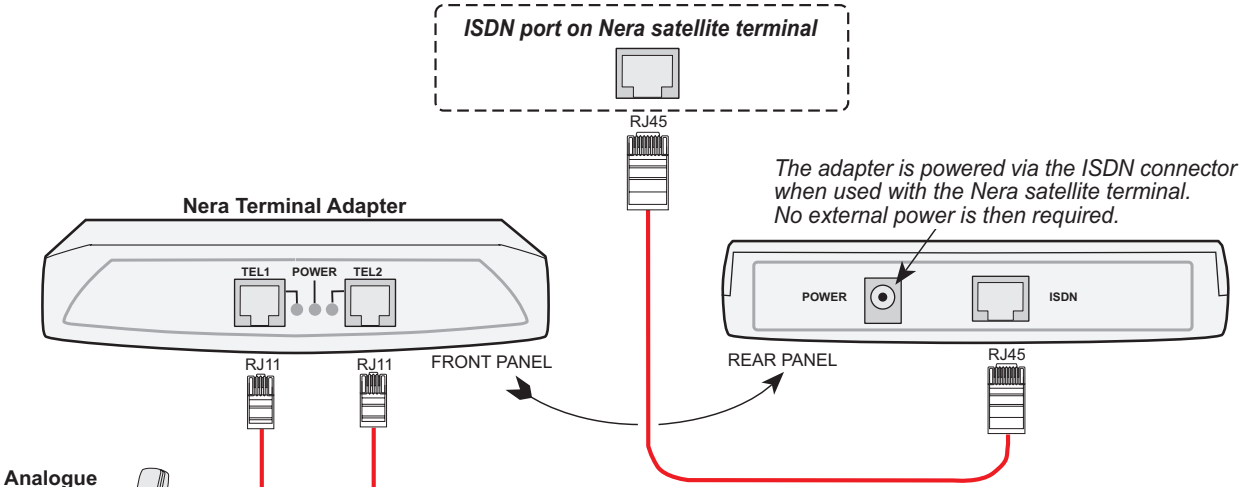
Taper braid towards centre conductor. Position **clamp D** so that its shoulder fits against cable jacket.



Fold back braid over **clamp D** and cut it off in front of the clamp rim. Check dimension of 1.5 mm. Tin centre conductor of cable.
Heat contact pin or bush E with a soldering iron of approx. 250 W. Tin bore hole sufficiently. Insert centre conductor into hole and remove soldering iron quickly in order to prevent dielectric from deformation.



Insert connector body. Screw in and tighten **nut A** with wrenches of 16 mm, type 74Z 0-0-3, until rubber **gasket C** is split. Do not distort cable and connector body.
Armoured cable: Finally, screw on and tighten armour clamp.



*The **Nera Terminal Adapter** has two 2-wire analogue connectors which provide speech and 9.6 fax services. Both ports are set for speech as default.*
All programming of the Nera Terminal Adapter is done from the keypad on an analogue telephone/fax connected to the port to be programmed.

Example on programming service and MSN on current port		
* 9 3 * 2 #	wait for acknowledge tone	Programs speech service in the Nera TA
* 9 0 * 2 1 #	wait for acknowledge tone	Programs MSN 21 in the Nera TA By default the Nera Satellite terminal provides 4.8kbps speech with MSN 21 .
* 9 3 * 1 #	wait for acknowledge tone	Programs 9.6kbps fax service on current port
* 9 0 * 4 0 #	wait for acknowledge tone	Programs MSN 40 in the Nera TA By default the Nera Satellite terminal provides 9.6fax with MSN 40.

For assigning MSN numbers to the Nera satellite terminal, see the manual/CD in question.

Comments:

Assigning MSN to current port	
* 9 0 * <MSN> #	Assigns MSN into current port
* 9 0 * #	Deletes MSN programmed into current port

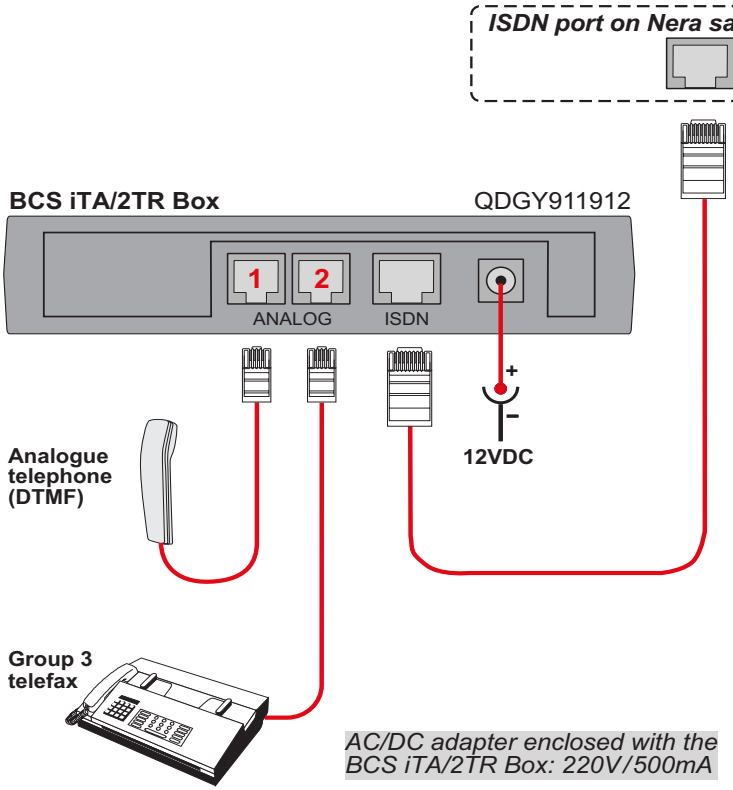
Assigning service to a port	
* 9 3 * #	* Resets the service to default factory setting on both ports (the programmed MSN is not reset).
* 9 3 * 2 # * 9 3 * 1 #	Assigns 4.8 kbps speech to the current port. Assigns 9.6 kbps fax to the current port.

* Default factory settings is 4.8 kbps speech.

Notes!

If the adapter is used with a standard wall ISDN outlet, external power is required. Supply voltage: +9 VDC, 600 mA.

If mismatch in the programming, the Nera satellite terminal overrides the programming in the Nera Terminal Adapter



AC/DC adapter enclosed with the BCS iTA/2TR Box: 220V/500mA

For further information, see the BCS iTA/2TR manual.

All programming of the BCS.iTA/2TR box is done with an analogue telephone/fax connected to the one to be programmed (except PIN code which can be programmed from any port).

PIN code:

To allow programming, the default 5-digit PIN code 00000 must first be changed using the "90" command. *To enter e.g. 01234, dial:*

[*] [9][0] [*] [0][0][0][0][0] [*] [0][1][2][3][4] [#]

command *Default PIN code* *New PIN code*

Assigning an MSN number to a port:

Enter MSN for appropriate service (e.g. MSN 40 = 9.6 kbps fax, MSN 21 = 4.8 speech). Use command 01 to program an MSN number (example):

[*] [0][1] [*] [0][1][2][3][4] [*] [4][0] [#] ACK. TONE

command *PIN code* *MSN number*

The port now only responds to calls directed to MSN number 40 (see Device Manager in vtLite Marine to select correct MSN).

Configuring a port:

The service type must be assigned to a port:

Group 3 telefax: type 4

Analogue telephone or modem: type 2

E.g. to program the port for connection of fax, dial:

[*] [0][4] [*] [0][1][2][3][4] [*] [4] [#]

command *PIN code (example)* *service type 4 (ex.:group 3 fax)*

Term. Id	Service	Inmarsat services
01 - 0F	Voice	**B**: 16.8, **M**: 4.8, **Mini-M**: 4.8, **F77**, **F33**, **F55**: 4.8
11 - 1F	Fax	**B**: 9.6, **M**: 2.4, **Mini-M**: 2.4, **F33**, **F55**: 9.6
16 - 1F	Fax	**F77**: 9.6
21 - 2F	ASD	**B**: 9.6, **M**: 2.4, **Mini-M**: 2.4, **F33**: 9.6
31 - 3F	Telex	**B**
41 - 4F	HSD	**B**
51 - 5F	64k Data (UDI)	**GAN/F77/F55**
61 - 6F	3.1kHz Audio	**GAN/F77/F55**
71 - 7F	56K Data	**GAN/F77/F55**
	N.C.	
91 - 9F	64K Speech	**GAN/F77/F55**

Terminal Identities and the corresponding Inmarsat Services.

Note! MPDS is given the Terminal Id: A1 (not programmable)

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